PROBLEM AND NON-PROBLEM GAMBLERS IN NEW ZEALAND: A REPORT ON PHASE TWO OF THE 1999 NATIONAL PREVALENCE SURVEY

Report Number Six of the New Zealand Gaming Survey

Max Wenden Abbott

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Chief Executive's Foreword

Problem and Non-Problem Gamblers in New Zealand: A Report on Phase Two of the 1999 National Prevalence Survey is the sixth report from the New Zealand Gaming Survey. It forms the second phase of a two-phase national prevalence survey of problem gambling in New Zealand.

The results from the first phase have already been published in *Taking the Pulse on Gambling and Problem Gambling in New Zealand*. In that report interviews were conducted with a sample of 6,452 adults by Statistics New Zealand. The present report outlines the results of more in-depth interviews conducted with 256 phase one participants by the National Research Bureau.

The study provides valuable information on the nature of gambling and problem gambling in New Zealand in addition to that already provided by Phase One.

I would like to thank Professor Max Abbott and Andy Heinemann and his team of National Research Bureau interviewers, for their work in producing the report. I would also like to thank the interview participants whose willingness to give up their valuable spare time for a further face-to-face interview, made the study possible.

This report is the latest in a series of studies that make up the New Zealand Gaming Survey, a substantial body of gambling research commissioned by the Department of Internal Affairs. The full suite of seven reports from the Survey will comprise:

- A critical review of international literature on gambling participation and problem gambling prevalence
- Results from fresh interviews with people who participated in Phase 2 of a previous national survey in 1991/1992
- Results in two reports of the 1999 two-phase national prevalence study
- A survey in two reports of the gambling behaviour of recently incarcerated prisoners
- A synthesis of all aspects of the research project.

In addition, the Department has recently published a supplementary report bringing together in one volume three years of Problem Gambling Committee data on problem gambling counselling in New Zealand.

This is a very significant body of work that will assist Government in making informed choices in relation to its policy on gambling and responses to problem gambling in New Zealand.

Peter Hughes
Secretary for Internal Affairs

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Introduction

The first national survey of gambling and problem gambling was conducted in 1991 (Abbott & Volberg, 1991; 1992; 1996; Volberg & Abbott, 1994). This study involved two phases. In the first phase, 4,053 adults were interviewed by telephone to assess their gambling involvement and estimate the prevalence of problem gambling in New Zealand. In the second phase, smaller samples of people were re-interviewed in greater depth, face-to-face.

Four sub-samples were included in the second phase:

- Probable pathological gamblers
- Problem gamblers with less severe problems
- Non-problem gamblers who participated frequently in continuous forms of gambling such as gaming machines and track betting
- Non-problem gamblers who participated frequently in non-continuous forms of gambling such as Lotto (a national lottery) and raffles.

This phase allowed more detailed information to be obtained from problem gamblers and regular non-problem gamblers concerning their gambling participation, problem gambling and the impact that gambling had on various aspects of their lives. It also facilitated independent assessment of the accuracy of the problem gambling measure used in the study.

This was the first national gambling survey, worldwide, to use a validated measure of problem gambling. It was also the first study to assess both current and lifetime problem gambling and employ a two-phase (double sampling) design. The current and lifetime problem gambling measure developed for the 1991 study has since been widely used, enabling comparisons to be made between different jurisdictions as well as over time.

Since the first national survey was undertaken, gambling availability and expenditure increased, albeit at a lower rate than during the three years preceding the initial survey. New forms of gambling were introduced, including casinos in Auckland and Christchurch. Existing forms, most notably non-casino gaming machines, became more widely available.

The present report outlines and discusses the main findings of Phase Two of the second national survey of gambling and problem gambling. The first phase of this study, the National Prevalence Survey (NPS), is described in Volume Three of the New Zealand Gaming Survey (NZGS) (Abbott & Volberg, 2000) report series. The NZGS, commissioned by the Department of Internal Affairs, was undertaken to investigate some of the impacts of the 1990s gambling expansion on the lives of New Zealanders and to advance scientific understanding of gambling and problem gambling. Additional aims of the NZGS are to:

- Provide information that will assist in the development of gaming and related health and social policy

- Contribute to robust frameworks for future studies of the prevalence and wider economic and social impacts of gambling and problem gambling
- Provide a solid baseline to enable assessments of future changes in the prevalence of problem gambling and gambling participation to be made.

The other volumes in the NZGS publication series are:

- Volume One, which provides a critical review of surveys of gambling and problem gambling conducted internationally (Abbott & Volberg, 1999a)
- Volume Two, which is a report on a seven year longitudinal follow-up of 1991 Phase Two participants (Abbott, Williams & Volberg, 1999)
- Volume Four, which outlines and discusses the findings of a national survey of recently sentenced women prisoners (Abbott & McKenna, 2000)
- Volume Five, which outlines and discusses the findings of a survey of recently sentenced inmates in four male prisons (Abbott, McKenna & Giles, 2000).

In addition, a supplementary report has been published that gives a profile of people seeking help for gambling problems from 1997 to 1999 from helpline and counselling services funded by the Problem Gambling Committee (Gruys, Hannifin, MacKinnon & Paton-Simpson, 2000).

A further report, Volume Seven, that provides a synthesis of the major findings from all components of the NZGS will be published in 2001.

All of the NZGS reports are available on the Department of Internal Affairs' website at: http://www.dia.govt.nz

The National Prevalence Survey: Phase One

Phase One of the NPS was primarily undertaken to provide reliable estimates of problem gambling in the adult New Zealand population, as well as to provide estimates of the proportions of adults who engage in different forms of gambling at varying levels of intensity. Because it was national in scope and used somewhat similar methodology to that of the previous national survey, it was also intended to give an indication of changes in gambling participation and problem gambling since 1991.

The first phase of the NPS involved telephone interviews with 6,452 adults, aged 18 years and older, who were interviewed during the first quarter of 1999. Statistics New Zealand, the country's official government statistical agency, undertook the survey. The response rate, conservatively defined, was 75 percent. The survey data were subsequently weighted to scale the sample to represent the whole adult population and to account for different probabilities of respondent selection and different rates of non-response between sub-populations. Because a complex sample design was used, this complexity was taken into account in estimating sample errors, determining confidence intervals and conducting statistical analyses. Adjustments were also made to provide appropriate confidence intervals for measures, such as problem gambling, with low proportions.

While the above procedures and other aspects of the methodology resulted in a sound probability survey, probably the most robust to date in the gambling studies field, some groups were not included in the sample. Apart from people under the age of 18 years, excluded groups included people residing in non-residential dwellings such as hospitals and prisons, residents of households without telephones and people with telephone numbers not included in current electronic listings. In addition, response rates for some groups including young adults and Pacific Islanders were lower than those of other respondents. Although weighting of the data adjusts for this lower representation, it cannot correct for differences in gambling participation and problems (if they are present) between survey participants and non-participants in these groups. Furthermore, while internal checks on consistency of responding can be made, it is not possible to independently assess the accuracy of respondent self-reports of gambling and other behaviours and attributes. These considerations are relevant to all probability surveys.

In Phase One of the NPS, it was estimated that 94 percent of New Zealand adults had taken part in at least one type of gambling activity at some time in their lives. Past six months participation in at least one type was 86 percent and regular (weekly or more often) participation was 41 percent. Of those who reported gambling regularly, three-quarters took part regularly only in non-continuous forms, primarily Lotto. The remaining quarter participated regularly in continuous forms. Some of those regular continuous gamblers also participated regularly in non-continuous forms. Similar rates of regular gambling have been found in recent national surveys in Australia and Sweden, although in Australia twice as many participated regularly in continuous forms.

From reports of typical gambling expenditure (total losses) the estimated annual expenditure of New Zealand adults on all forms of gambling was NZ$1.16 billion, similar to the official Department of Internal Affairs total of NZ$1.05 billion at that time for major forms of legal gambling. The average monthly reported expenditure per adult was NZ$41.

In 1999, 0.5 (0.3-0.7 confidence interval) percent of adults were estimated to be current (during the past 6 months) probable pathological gamblers and a further 0.8 (0.6-1.1) percent were estimated to be current problem gamblers with less severe problems.

In 1999, 1.0 (0.7-1.4) percent of adults were estimated to be lifetime probable pathological gamblers and a further 1.9 (1.4-2.5) percent were estimated to be lifetime problem gamblers.

For reasons discussed in the Phase One report, it is considered that these estimates are likely to be conservative, i.e. they probably underestimate the extent of problem gambling in New Zealand, both currently and in the past.

Although current probable pathological and problem gamblers were estimated to constitute only somewhat more than one percent of the adult population, this group was responsible for approximately a fifth of total reported gambling expenditure. Given that expenditure for some forms of continuous gambling including gaming machines is under-reported, this estimate is likely to be highly conservative.

A great deal of additional information about gambling and problem gambling, including risk factors for problem gambling, was obtained from the Phase One survey. This information is outlined and discussed in the Phase One report.

In 1999, some risk factors were found to be the same as those identified in the 1991 national survey, for example Māori and Pacific Island ethnicity and regular participation in non-casino gaming machines and betting on horse or dog races. Others, including male gender, young age and being unemployed were no longer associated with current probable pathological gambling. These changes are consistent with reduced reported gambling involvement and expenditure in these groups from 1991 to 1999.

Contrary to expectation, given the increase in gambling availability and official expenditure since the 1991 national survey, the 1999 Phase One survey obtained somewhat higher population estimates for infrequent gambling and significantly lower estimates for regular participation in continuous forms of gambling and probable pathological and problem gambling. **These findings suggest that high-risk gambling patterns and problem gambling rates have levelled out or declined. However, it would be premature to conclude that this is the case given that there are only two measurement points and that there are some differences between the two studies with respect to their methodologies, samples and statistical treatment of data. For the most part these differences arose from the objective, in 1999, to conduct a high quality probability survey and attain a high response rate.**

Although the problem gambling prevalence estimates are lower than in 1991, they are similar to those obtained in recent surveys conducted in Sweden and in Australian states that have per capita gambling expenditure most similar to that of New Zealand. They are lower than in Australian states and territories with higher expenditure.

The National Prevalence Survey: Phase Two

Description, Response Rate and Sample

The survey described and discussed in this report involved in-depth interviews, conducted face-to-face with 256 Phase One respondents. The Phase Two sample included:

- SOGS-R defined lifetime probable pathological and problem gamblers (n=74)
- Regular continuous gamblers (n=25)
- Regular non-continuous gamblers (n=68)
- Infrequent gamblers (n=89).

Sixty percent of the selected Phase One respondents were re-interviewed four to eight weeks after their initial interviews. Given that these people were drawn from the Phase One sample that had a response rate of 75 percent, the response rate for Phase Two was 45 percent. Although higher than many previous single phase gambling and problem gambling surveys, this rate increases the potential for non-sampling errors to affect the survey findings.

To assess the representativeness of the study group, 45 comparisons were made between the Phase One and Phase Two samples with respect to various sociodemographic and gambling-related measures. While a small number of statistically significant differences were found, in the case of the problem gambling measures neither

the sample as a whole nor any of the major sub-samples differed significantly from the larger Phase One sample.

In contrast to Phase Two of the 1991 national survey, people who reported gambling less than once a week were included. Attempts were made to re-interview all Phase One lifetime probable pathological and problem gamblers. Participants in the three non-problem groups were selected using sampling fractions based on their relative proportions in the 1991 national survey. Although it was expected that this would produce Phase Two sub-samples of a similar size, somewhat more infrequent gamblers and substantially less regular continuous gamblers were recruited than anticipated. This was primarily due to the shift in the proportions of these non-problem groups in the 1999 Phase One sample.

Because only a small number of regular continuous gamblers were selected and interviewed, the two groups of regular gamblers were combined. The major comparisons outlined in this report are between lifetime probable pathological and problem gamblers (problem gamblers), regular continuous and non-continuous gamblers (regular gamblers) and infrequent gamblers. The six percent of people who reported that they had never gambled were not included.

The whole sample and sub-samples were weighted to enable the survey findings to be generalised to the New Zealand adult population that reported having ever gambled. However while most of the findings, typically reported as percentages, can be generalised in this way, it was not feasible to calculate sampling errors and confidence intervals. The main reasons for this were the high level of complexity of the sample and the relatively low response rate. While the magnitude of differences between groups and the number of people involved provide an indication of the confidence that can be placed in reported estimates and differences between groups, their reliability is much less certain than those obtained from Phase One. **Consequently, the study should be regarded as exploratory and the findings tentative pending more detailed examination using larger samples and more rigorous study designs. In some instances differences between sub-samples may be apparent rather than real.**

The Phase Two survey was primarily concerned with providing more detailed information about problem gamblers, non-problem gamblers and the measurement of problem gambling.

Selected Major Findings

Problem Gambling Measurement

Although the Revised South Oaks Gambling Screen (SOGR-R) was the main measure of problem gambling used in the NPS, additional measures were included. For example, in Phase One, apart from the SOGS-R, participants were asked if they, themselves, considered that they had a problem with gambling, at any time during their lifetimes and during the past six months. Although there was only a moderate level of agreement between these two measures, the prevalence estimates for self-assessed problem gambling were similar to those for SOGS-R probable pathological gambling.

In Phase Two, two additional measures were used to identify problem gamblers, the Fisher Screen and interviewer ratings. The Fisher Screen is a psychometric instrument based on the most recent American Psychiatric Association (DSM-IV) diagnostic criteria for pathological gambling. It provides a current (past 12 months) measure of probable pathological and problem gambling. The interviewer ratings use diagnostic criteria for pathological gambling from the earlier DSM-III-R and provide a lifetime measure of probable pathological gambling. The SOGS, from which the SOGS-R was developed, was originally validated against clinical interviews using these criteria.

Moderately high agreement was found between classifications based on the current SOGS-R and Fisher Screen current measure. Somewhat less agreement was found between the lifetime SOGS-R and interviewer lifetime classifications.

Nine of the 11 SOGS-R current probable pathological gamblers were identically classified on the basis of their Fisher Screen scores. The other two were classified as problem gamblers. Seven of the 22 SOGS-R defined current problem gamblers were also assessed as problem gamblers by the Fisher Screen and a further five were assessed as probable pathological gamblers. The remaining ten were not assessed as having problems. In addition, the Fisher Screen classified six SOGS-R defined non-problem gamblers as probable pathological gamblers and a further eight as problem gamblers. Thus, whereas the SOGS-R identified 11 current probable pathological gamblers, the Fisher screen identified 20. Whereas the SOGS-R identified 22 current problem gamblers, the Fisher Screen identified 17. Overall, the Fisher Screen classified somewhat more people as current probable pathological and problem gamblers than the SOGS-R (37 versus 33).

Twelve of the 30 SOGS-R lifetime probable pathological gamblers were similarly classified on the basis of the interviewer DSM-III-R ratings. Three additional participants were rated as lifetime probable pathological gamblers. Two were SOGS-R defined lifetime problem gamblers and one was a non-problem gambler. Thus, whereas the SOGS-R identified 30 people as lifetime probable pathological gamblers, the interviewer ratings identified only 15.

'Revision' of the Phase One SOGS-R Prevalence Estimates

Standard epidemiological procedures were used to revise the original Phase One estimates by incorporating information about the performance of the SOGS-R relative to the Fisher Screen and interviewer ratings. **To conduct these revisions it was necessary to assume that the two alternative measures do not make classification errors**. In reality, however, it is highly likely that they do.

In Phase One, the current SOGS-R probable pathological gambling point prevalence estimate was 0.5 percent and the combined probable pathological and problem gambling estimate was 1.3 percent. Incorporating information relating to the Fisher Screen, the revised current probable pathological gambling estimate is 1.8 percent and the combined current pathological and problem gambling estimate is 5.3 percent.

In Phase One, the lifetime SOGS-R probable pathological gambling point prevalence estimate was 1.0 percent. Incorporating information relating to the interviewer DSM-III-R assessments, the revised estimate is 1.4 percent.

While both the revised current and lifetime estimates are higher than those based on the SOGS-R alone, the assumption that the alternative measures are more accurate than the SOGS-R is most unlikely to be valid. Neither has been as fully validated as the SOGS-R as psychometric instruments and, in the present situation, they produce a current probable pathological gambling prevalence estimate that is somewhat higher than the corresponding lifetime estimate. This is not logically possible unless one or both misclassify to some extent. **For these and other reasons outlined in the report, the revised estimates should not be viewed as being more accurate than those based on the SOGS-R alone. However they do suggest that the SOGS-R based estimates are conservative (as suggested in the Phase One report) and that, had the Fisher Screen been used in Phase One instead of the SOGS-R, the prevalence estimate for probable pathological and problem gambling would have been higher.**

Gambling Preferences and Participation

In Phase One it was found that Lotto was the only form of gambling that a significant proportion of adults (over a third) reported taking part in weekly or more often. TeleBingo and Instant Kiwi were the only other activities engaged in this often by more than five percent of adults.

In Phase Two it was confirmed that only relatively small proportions of people participate weekly or more often in most forms of gambling. However, it was also found that for some of these forms, a moderately high percentage of the people who report taking part do so very often (daily or more than once a week). In other words, while not widely popular, many people who do favour them have a high degree of engagement. Daily Keno stands out in this regard. Taking money bets with friends and workmates and TeleBingo are also in this category. In the case of TeleBingo, this might help explain the unexpected Phase One finding that this non-continuous form of gambling was associated with problem gambling.

As in Phase One, lifetime probable pathological and problem gamblers (problem gamblers) much more often than non-problem gamblers reported a preference for and regular participation in betting on horse or dog races and non-casino gaming machines. They also more often reported a preference for and regular participation in card games for money, casino gaming machines, other casino games, housie, other sports betting, bets with friends or workmates and residual forms that were not listed separately.

With respect to frequent participation in continuous gambling activities associated with problem gambling, relatively little difference was found between men and women or between younger and older adults on most forms. This suggests that there has been a partial convergence since the 1991 national survey in the gambling preferences and participation of these groups. This is consistent with the failure to find differences in current problem gambling prevalence between these groups in Phase One of the present survey.

In contrast to the situation with gender and age, substantial differences were found between the three ethnic categories that were compared, namely Europeans, Māori and people of other ethnicities. **However, caution is required in interpreting these findings because of the small number of non-Europeans in the sample**.

Length of Typical Gambling Sessions and Expenditure

With respect to their favourite or most frequently engaged in gambling activity, participants were asked how long their typical sessions were and how much they usually spent. Gambling activities of this type averaging 100 minutes or more included casino games other than gaming machines, betting on horse or dog races, playing card games for money, housie and casino gaming machines.

Casino games and casino gaming machines were reported to have by far the highest average reported expenditure per session. However, relative to most other forms of continuous gambling, few people reported taking part in them more than once a month. Non-casino gaming machines, betting on horse or dog races and playing card games for money ranked next in terms of average typical session expenditure. Most forms in the low expenditure category are non-continuous and are not associated with problem gambling.

People Usually Gambled With

Partners or spouses were most often mentioned as being usual gambling companions in all favourite forms of gambling considered. However, Instant Kiwi, other lotteries and raffles, TeleBingo and non-casino gaming machines were more often participated in alone than with partners or spouses. Casino gaming machines were least often participated in alone.

Most forms of gambling were engaged in moderately often with other family members. This was especially so for TeleBingo and betting on horse or dog races. Friends were also mentioned moderately often in this regard for betting on horse or dog races, as well as for casino and non-casino gaming machines. Workmates and other people were seldom mentioned as gambling companions.

Reasons for Gambling

In Phase One over a half of adults said they gambled to win money and over a third said they gambled for entertainment or fun. In Phase Two, questions concerning reasons for gambling were phrased differently and examined separately for each of the major gambling activities.

In Phase Two winning money and entertainment were also most often given as the main reasons for gambling and these reasons retained their top ranking across the gambling status (problem, regular and infrequent gamblers), gender, age and ethnicity groups considered. However, some groups mentioned these reasons relatively more often than others. For example, problem gamblers more often said they mainly gambled for entertainment than people in either of the non-problem groups did. Men more often said they mainly gambled to win money.

Differences between groups were found for some of the less frequently mentioned reasons for gambling. For example, problem gamblers, women and people of other ethnicities more often said they mainly gambled for excitement. Infrequent gamblers,

women and older adults more often said their main reason was to support worthy causes.

In addition to being asked about their reasons for gambling in general, Phase Two respondents were asked why they took part in their favourite (preferred) form of gambling. As the number of people preferring some gambling activities was small, only five forms were examined in this regard. When these forms were considered separately, substantial differences were evident.

It was estimated that over a quarter of people mainly took part in Lotto to win money or prizes and that somewhat more did so because it was convenient or easy to play.

A fifth of people who favoured Instant Kiwi gave low cost as their main reason for participation. Entertainment or it being quick to play was also mentioned by ten percent or more people.

Sixty per cent of people who favoured other lotteries and raffles mainly did so to support worthy causes. Some people also mentioned convenience or ease of play.

As for Lotto, just over a quarter of people played in non-casino gaming machines mainly to win money. A significant minority also mentioned entertainment.

Entertainment and being interested were the reasons most often given by people who preferred betting on horse or dog races. Socialising was the third ranked reason given for participation in this form of gambling. As with Instant Kiwi and other lotteries and raffles, very few mentioned winning money as the main reason for their involvement.

The differences between sociodemographic groups and variations across forms with respect to preferences, frequency of participation, usual people gambled with, session lengths and expenditure, and differences in reasons for participation highlight the heterogeneity of gambling activities. Further research is required to clarify how these differences relate to the development and maintenance of problem gambling as well as to the satisfaction that many people obtain from gambling involvement.

Gambling in Families, with Friends and in the Workplace

It was estimated that substantially more people gambled in their present family than gambled in the family that they grew up in. However, although more people gambled within their present family, most indicated low levels of involvement. On the other hand, although fewer people said there was gambling in the families that they grew up, more said there was a lot or a moderate amount of gambling. People aged 35 years and over, compared to people aged under 35 years, more often reported that there was no gambling in their families of origin. They also more often reported moderate and heavy gambling**. These findings suggest that, although considerably more families gamble today than in the past, fewer do so frequently.**

Problem gamblers, relative to non-problem gamblers, were estimated to have much higher levels of moderate and heavy gambling in the families that they grew up in, in their present families and among their friends.

There appeared to be substantial ethnic differences. Māori appeared to have much higher rates of heavy gambling involvement in their families of origin than Europeans or people of other ethnicities. They also more often reported that there was a moderate amount of gambling in their present families and on the part of their friends and workmates. People of other ethnicities reported a bimodal pattern of involvement in the families that they grew up in, with two-thirds reporting no gambling and a third reporting a moderate amount. In contrast, all of these people said that there was at least some gambling in their present family, although less mentioned moderate or heavy involvement. Europeans displayed more consistency between their families of origin and present families. The major difference was that less said they did not gamble at all and more said they gambled a little. **It is important to recall that the Māori and other ethnic group findings need to be treated with extreme caution owing to small sample size.**

People generally reported higher levels of gambling involvement among their friends than within their own families, possibly suggesting conservatism in their self-reports.

Retrospective Accounts of Gambling History

A substantial part of the survey questionnaire deals with accounts of gambling involvement at different times in participants' lives and their perceptions of changes in participation over time. Given that this involved participants reporting on aspects of their lives that were often distant in time, there was potential for bias in recall and reporting. As the extent of such bias is unknown, the findings of this section must be regarded as tentative.

Age when First Gambled

Although the average age at which people reported first starting gambling was 20 years, considerable variation was evident across the gambling participation and sociodemographic groups.

As in Phase One and in Phase Two of the 1991 national survey, problem gamblers more often reported started gambling during their childhood or early teens. However, more than a third commenced gambling as adults.

There were indications that somewhat more people commenced gambling during childhood than was the case 20 or more years ago.

Compared to people with other current gambling preferences, more people who said that they currently preferred betting on horse or dog races were estimated to have started gambling before the age of 15 years. People who currently preferred other lotteries or raffles were also somewhat over-represented among those who commenced gambling before the age of 15 years. In contrast, people who preferred non-casino gaming machines more often started gambling at the age of 20 years or older.

Introduction to Gambling

People most often reported that they had first been introduced to gambling by family members, followed by friends and, much less frequently, by workmates or their

spouses/partners. As with the age at which people first gambled, there were some substantial differences between gambling participation and sociodemographic groups.

Consistent with the finding of higher levels of gambling involvement in the families that problem gamblers grew up in, problem gamblers much more often said they had been introduced to gambling by their family.

Gambling Involvement and Preferences when First Started Gambling

It was estimated that a half of people took part in lotteries and raffles when they first started gambling. Nearly a third mentioned horse or dog races in this regard and a quarter Lotto. Instant Kiwi, non-casino gaming machines and card games for money were the only other gambling activities mentioned by more than five percent of people.

In contrast to non-problem gamblers, who most often reported participating in other lotteries and raffles when they first started gambling, problem gamblers most often said they bet on horse or dog races. However, they differed most from non-problem gamblers in that they reported much higher levels of involvement in playing cards and housie for money and lower levels of involvement in Lotto and Instant Kiwi. They also reported somewhat higher levels of involvement in non-casino gaming machines. With respect to preferences, playing card games for money stood out for problem gamblers. This group much less often mentioned Lotto and other lotteries and raffles as most preferred activities.

Apart from more often participating in and favouring forms of gambling that are associated with problem gambling in adults, problem gamblers' initial gambling involvement differed in other ways from that of non-problem gamblers. These differences included more frequent participation in their favourite form, substantially higher expenditure, longer typical session lengths and usually gambling in the company of others, especially family members or workmates.

A variety of differences were found between the sociodemographic groups with respect to gambling participation and preferences. For example, at the time they started gambling, males more often participated in and preferred betting on track races and card games, whereas females mentioned non-casino gaming machines and other lotteries and raffles more often. Betting on horse or dog races was important in introducing a number of people to gambling as adults.

While people who reported that they first started gambling before the age of 15 years most often said they took part in other lotteries and raffles at that time, non-casino gaming machines and betting on horse and dog races ranked next in terms of both participation and preference. These findings were unexpected give the age restrictions on sites where these forms of gambling are located.

Changes in Gambling Preferences and Participation

In this section, changes in the forms of gambling that people said they preferred or participated in frequently are examined. Three points in time are considered: when people first started gambling, five years ago, and during the six months prior to the survey. The information used to make these comparisons is retrospective and is much less likely to be reliable than that obtained from prospective studies.

Gambling Five Years Ago in Comparison to when People Started Gambling

Relative to the time when people first reported taking part in gambling activities, substantial increases were apparent in involvement in some forms of gambling five years prior to the survey. All three gambling status groups reported large increases for Lotto and Instant Kiwi. These two activities were not available when the majority of older adults first commenced gambling. These three groups also reported reduced participation in other lotteries and raffles and playing card games for money, forms that have long been available in New Zealand.

In contrast to the forms of gambling just mentioned that increased or decreased across the problem and two non-problem groups, a different pattern was evident for betting on horse or dog races and non-casino gaming machines. Participation in both forms, but particularly non-casino gaming machines, decreased for non-problem gamblers. However, in the case of lifetime problem gamblers, reported participation increased. These findings are consistent with those of other studies that indicate a strong association with these two continuous forms of gambling and problem gambling.

Given the relatively recent introduction of non-casino gaming machines, the large reduction in participation for the non-problem gamblers and the population as a whole was unexpected and suggest that involvement in this gambling activity is transitory for many people. Betting on horse and dog races appears to have somewhat greater stability.

As mentioned, at the time they first commenced gambling, males more often bet on horse or dog races and played cards for money and females more often mentioned other lotteries and raffles and non-casino gaming machines. From the reports of gambling involvement five years ago, gender differences were no longer apparent for the two forms that were initially favoured by males. Females, however, continued to report higher levels of involvement in the forms they initially favoured. These findings are consistent with the view that there has been some convergence in the gambling participation of men and women over time, with women more resembling men.

A variety of differences were found between the gambling participation of other sociodemographic groups five years ago. In some cases they showed continuity with patterns at the time they commenced gambling and in other cases they differed.

Gambling at the Time of the Survey Compared with Five Years Ago

Current (past six months) information on gambling participation was obtained from Phase One of the 1999 NPS. Compared to five years ago, Lotto participation and betting on horse and dog races appears to be much the same, whereas other forms appear to have increased. However, these findings should be treated with caution owing to somewhat different questions being asked for the two time periods.

Early Gambling Preferences in Relation to Later Gambling Preferences

Major forms of gambling that were preferred by participants at different times were examined to assess their degree of stability. Sample size restrictions limited consideration to people with no favourite form and people who favoured Lotto, other

lotteries and raffles, non-casino gaming machines, betting on horse or dog races and other gambling activities.

It was estimated that approximately two-thirds of people changed their favourite form of gambling from the time they started gambling to the present. Considerably less, approximately a third, were estimated to have changed their preference during the past five years.

Relative to other forms, Lotto preferences were highly stable across the three points of time considered. Lotto also differed from the other types of gambling examined in that substantial numbers of people who initially indicated a preference for other forms (apart from non-casino gaming machines) currently reported that Lotto was their favourite.

The majority of people with an initial preference for non-casino gaming machines subsequently developed a preference for another gambling activity, predominantly in the residual 'other' category. However, while preferences for this type of activity appear to be highly transitory over long periods of time, this was less evident during the past five years. Most people who said that non-casino gaming machines were their favourite five years ago retained this preference.

Most people with an initial preference for betting on horse or dog races subsequently indicated that they favoured some other type of gambling (most often Lotto or 'other' activities). During the last five years, preferences for both betting on horse or dog races and 'other' gambling activities were somewhat less stable than for non-casino gaming machines. Although most people did not retain their initial preference for track betting, the large majority of people who reported that track betting was currently their favourite had not previously preferred another activity. In this latter respect it differs from the other forms considered. In the case of other forms, the majority of people had in the past preferred some other type of gambling.

People with no favourite five years ago were the least stable, with most since developing a gambling preference, predominantly Lotto or other lotteries and raffles.

With respect to preferences over time, betting on horse or dog races and non-casino gaming machines remained important for lifetime problem gamblers. However, Lotto increased in importance, albeit that problem gamblers' preference for this form remained much lower than that of non-problem gamblers. With respect to current preferences, in contrast to five years ago or when they first commenced gambling, problem gamblers much less often mentioned betting on card games and some other forms, including casino gaming machines and other casino games, were more often mentioned.

Self-assessed Changes in Gambling Participation and Reasons Given by Participants for Increased and Decreased Participation

Participants were asked how much they considered that their overall gambling participation had changed during the past five years and, for purposes of analysis, these self-ratings were classified as increased participation, no change and decreased participation. Those who reported increased or decreased participation were asked what factors they considered led to this change in involvement over time. In addition, all participants were asked if they considered that advertising, the introduction of new kinds

of gambling, greater access to gambling or easier access to credit cards had ever led to an increase in their gambling.

Changes

Just over half (53%) of people considered that their overall gambling participation had not changed during the past five years. Somewhat more (28%) were of the view that it had decreased rather than increased (19%).

Considerable differences were evident across gambling participation and sociodemographic groups with respect to self-assessment of overall gambling participation changes during the past five years.

It was estimated that only about a fifth (19%) of lifetime problem gamblers considered that their level of participation had not changed during the past five years. Somewhat more (45%) reported decreases than increases (36%). Whereas just over a half of non-problem regular and infrequent gamblers reported no change, these groups differed in that slightly more regular gamblers mentioned increases than decreases whereas infrequent gamblers much more often reported decreases than increases.

Just over a half of both men and women indicated that their gambling participation had not changed. Whereas reported increases and decreases balanced for women, for men three times as many reported decreases than increases. This finding is consistent with the view that, relative to men, the gambling involvement of women has increased in recent years.

Younger adults reported much less stability than older adults and, in the case of younger adults, decreased participation out-numbered increased participation by more than two-to-one. For older adults, decreases only slightly out-numbered increases. This finding is consistent with the view that many younger people decrease their gambling involvement as they get older whereas older adults have somewhat more stable gambling involvement over time.

People who first started gambling during childhood or adolescence much more often reported decreased than increased gambling participation during the past five years. People who first started gambling as adults much more often reported increases than decreases.

Māori had the highest level of instability in that only 17 percent considered that their level of involvement had stayed the same during the past five years. In contrast, 55 percent of Europeans and 79 percent of people of other ethnicities reported no change. Whereas Europeans somewhat more often reported decreased rather than increased gambling involvement, for Māori, the situation was reversed. In the case of people of other ethnicities, the great majority of the modest number that reported changes said that their level of involvement had decreased. **Given the small sample sizes for Māori and people of other ethnicities, findings for these groups must be treated with caution**.

People who preferred betting on horse or dog races five years ago less often experienced changes in overall gambling involvement than people with other

preferences and, along with those who favoured other lotteries and raffles, were the only ones to report increases more often than decreases.

People who preferred Instant Kiwi, non-casino gaming machines and 'other' (unspecified) forms of gambling five years ago were the least stable and decreases greatly outnumbered increases.

The great majority of people who reported gambling more than once a week five years ago reported changed participation and decreases greatly out-numbered increases. This finding suggests that very high frequencies of gambling participation are transitory and that, while most people reduce their involvement over time, a minority sustain or increase their involvement. In contrast, those who gambled less than once a month to once a week had much greater stability and increases and decreases were more evenly balanced. People who gambled less than once a month were also less stable and decreases out-numbered increases by approximately two-to-one. Thus, both high and low frequency gamblers were prone to change over time and the net effect for both groups was decreased involvement.

Reasons Given by Participants for Increased and Decreased Involvement

People who reported an increase in gambling participation most often said that the reason was an increase in the money that they had available or there being more gambling options.

People who reported a decrease in gambling participation gave a wider variety of reasons including less money being available, a loss of interest in gambling, not winning, other priorities in life and a change in circumstances. Similar reasons for increased and decreased participation were given in the longitudinal follow-up of 1991 Phase Two participants (Abbott, Williams & Volberg, 1999).

Just under a quarter of people indicated that they considered advertising or the introduction of new forms of gambling had led to an increase in their gambling involvement at some time. Under a fifth reported that increased ease of gambling led to increased involvement and a small minority considered that easier access to credit cards had this effect.

Problem gamblers more often indicated that these four factors had resulted in an increase in their gambling involvement than did non-problem gamblers. Whereas very few non-problem gamblers believed that easier access to credit cards had influenced their gambling involvement, 17 percent of problem gamblers did. Non-casino gaming machine participation was most often mentioned in this regard.

'Big Wins' and 'Near Misses' in Relation to Problem Gambling

A quarter of problem gamblers and ten percent of people generally were estimated to have had a 'big win', defined as a sum equivalent to a half or more of their annual income or, if a child at the time, pocket money. Over a third (35%) of problem gamblers and a sixth (17%) of people generally were estimated to have had a 'near miss', defined as having been close to winning a major prize.

These findings are consistent with the hypothesis that these experiences, which are considered to play a role in problem gambling development, are more common among problem gamblers. However, while some people considered that these experiences affected their subsequent gambling behaviour, most did not.

'Costs' and 'Benefits' of Gambling in Major Life Spheres

The majority of people who gamble, including problem gamblers, indicated that gambling has given them pleasure and fun and that they have daydreamed about getting a big win. When gambling, over a half said they at least sometimes felt excited and just under a half said they were at least sometimes relaxed. Over a half of regular non-problem gamblers and three-quarters of problem gamblers said gambling has at least sometimes been a hobby and interest.

Relative to non-problem gamblers, lifetime problem gamblers more often indicated that they have:

- Gambled to escape from being depressed
- Felt depressed after losing heavily at gambling
- Felt guilty when finished gambling
- Felt that their gambling was a problem
- Went for help with gambling.

Although many people reported that they had talked about or taken part in gambling with family members or friends, less than ten percent said they had done so often or always during the six months prior to the survey. Relative to non-problem gamblers, problem gamblers more often mentioned this type of social involvement. However, they also much more often indicated that their gambling was sometimes more important to them than socialising with family and friends and that their gambling had led to a variety of conflicts and problems within their families and with friends. Examples include criticism of their gambling, arguments about money, problems for their families or friends and the breakup of important relationships.

Although approximately a fifth of people indicated that during the past six months gambling was widely discussed in their workplace, less than ten percent reported sometimes having gone gambling with workmates and very small numbers referred to other work-related gambling experiences or consequences. However, problem gamblers somewhat more often referred to some experiences and consequences of this type. From these findings, it appears that compared to gambling in relation to family and friends, gambling and its impacts are less important in work settings.

While most people said that they gambled to win money, nearly three-quarters of people indicated that gambling had never helped them financially and over two-thirds said they had never won more than they had lost gambling. Very few people said they often or always won or that gambling often or always helped them financially. Problem gamblers much more often reported having won NZ$1,000 or more and that gambling at least sometimes helped them financially.

Problem gamblers much more often than non-problem gamblers indicated that:

- They spent more money than they could afford gambling
- They gambled to try to win money to pay off gambling debts

- They borrowed money to gamble or pay gambling debts
- Their friends or family had had to pay their gambling debts.

Apart from 14 percent of problem gamblers indicating that they had borrowed money for gambling and eight percent acknowledging that they had thought about doing something illegal to get money for gambling or to pay gambling debts, hardly any people referred to gambling-related criminal involvement.

Although only a small number of people considered that gambling helped them financially approximately a third indicated that, at least some time in their lives, they had often or always expected to win every time they started to gamble. Twelve percent also reported that they believed that their gambling was often or always skillful. Relative to non-problem gamblers, problem gamblers much more often indicated that they expected to win money and considered their gambling to be skillful. Problem gamblers also more often reported that:

- After losing at gambling they often or always went back another day to win back their money
- They went on gambling longer when they were losing and had urgent debts
- They gambled when they had a disappointing or frustrating day
- They felt excited while gambling
- When they lost more money than they intended they at least sometimes were more likely to go on gambling if they felt excited
- They gambled longer than they planned
- They felt they wanted to stop gambling but did not think they could
- They were more likely to gamble if they had some luck and wanted to celebrate.

As in the 1991 Phase Two study, the negative aspects and consequences of problem gambling reported by participants were substantially less than those obtained from studies of problem gamblers in treatment, prison or mutual help group settings. This was especially so with respect to financial, criminal and work-related impacts. While in part this difference is likely to be a consequence of many people identified in the present study as problem gamblers having less severe problems than those in these other settings, it is also likely that problem gamblers under-report problems of this type when interviewed in general population surveys.

Problem Gambling in Relation to Substance Use and Misuse, Health and Mental Disorder

It was estimated that 37 percent of the lifetime problem gamblers engaged in hazardous alcohol use as measured by the AUDIT, more than double the adult population estimate based on the total study sample and found in the 1996/1997 New Zealand Health Survey (Ministry of Health, 1999).

Thirty-six percent of problem gamblers were estimated to smoke tobacco once a day or more, compared to the adult population estimate of 21 percent and previous New Zealand national survey estimates that range from 23 to 25 percent (Ministry of Health, 1999).

Sixteen percent of problem gamblers acknowledged having used cannabis during the past 12 months, compared to the adult population estimate of seven percent. Twelve percent reported using other illicit drugs during this period, compared to the adult population estimate of one percent.

Fifty-seven percent of problem gamblers were estimated to have been very happy during the past six months, compared to 64 percent for infrequent gamblers and 75 percent for regular gamblers. Infrequent gamblers somewhat more often (10%) reported having been somewhat or very unhappy during this period compared to problem gamblers (5%) or regular gamblers (4%).

On the basis of their GHQ-12 scores, 19 percent of problem gamblers, 19 percent of infrequent gamblers and 16 percent of regular gamblers were identified as likely to be currently experiencing clinically significant levels of non-psychotic psychological disorder. These findings suggest that there is no difference between problem and non-problem gamblers on this measure.

More problem gamblers (89%) than infrequent (73%) or regular (78%) gamblers rated their overall health as good and problem gamblers rated their health as fair or poor less than half as often as non-problem gamblers.

Problem Gambling among People Known to Participants

Eighty-three percent of lifetime problem gamblers and 46 percent of non-problem gamblers indicated that they believed someone known to them had experienced problems with gambling. These estimates appear to be similar to those obtained in the 1991 national survey (Abbott & Volberg, 1992), although sampling and other methodological differences preclude direct comparison.

Only about a quarter (24% of problem gamblers and 28% of non-problem gamblers) considered that they knew someone with an alcohol problem. **Given the higher prevalence of alcohol than gambling problems in New Zealand, this suggests that there is greater awareness of problem gambling than alcohol problems, an unexpected finding that requires further study.**

Eleven percent of problem gamblers and two percent of non-problem gamblers reported that they considered that their father had experienced a gambling problem. Differences were less evident for mothers (5%; 3%) and brothers (both 5%) although problem gamblers also reported higher rates for sisters (3%) than non-problem gamblers did (0%). Relative to non-problem gamblers, problem gamblers also reported higher rates for spouses or partners (5%; 2%), children (2%; 0%), cousins or other relatives (19%; 11%) and friends or someone else important in their life (18%; 9%).

Contrary to expectation, given the associations between gambling and alcohol problems found in the present study and other research, problem gamblers less often (4%) than non-problem gamblers (9%) reported that one or both of their parents had experienced problems with alcohol.

Major Risk Factors for Problem Gambling

A number of factors that appear to be associated with problem gambling are examined in the present study and more formally, using a variety of statistical analyses, in the Phase One report. In the Phase One report, multivariate analyses were also conducted to control for the effects of other variables and clarify the nature and relative strength of associations between problem gambling and other variables**. In Phase Two the smaller sample size, lower response rate and various design features precluded extensive use of inferential statistics. Nevertheless, multiple logistic regression was used in an exploratory way to help identify factors that are potentially important in predicting and explaining the development of problem gambling.**

From logistic regression analyses, three sociodemographic variables were found to be the strongest predictors of lifetime problem gambling, namely male gender, being aged under 35 years and non-European ethnicity. Only the latter variable (non-European ethnicity) was also found in the Phase One study to also be strongly associated with current problem gambling, suggesting that these factors were more important in the past than in recent years.

Many of the other factors considered likely to be predictors of problem gambling are associated with sociodemographic variables that are also linked to problem gambling. To partially control for the potential confounding effects of these shared associations, the three sociodemographic variables identified as having the strongest associations with problem gambling were included as control variables in logistic regression analyses designed to detect additional major risk factors for problem gambling.

From the logistic regression analyses that incorporated the demographic control variables, people who preferred a continuous form of gambling were found to be eight times more likely to be problem gamblers than people who most preferred non-continuous forms. In the present study and previous New Zealand studies, non-casino gaming machines and betting on horse or dog races are consistently found to be important in this regard. Other variables associated with twice the likelihood of being problem gamblers when the effects of gender, age and ethnicity were taken into account were having had a 'big win' and nearly having won a major prize. While caution is required in interpreting these results, these three factors warrant further investigation to clarify the nature of their relationships with the development and maintenance of problem gambling.

Changes in Problem Gambling Status and Help-seeking

Forty-one percent of lifetime problem gamblers and 55 percent of current problem gamblers indicated that they personally considered that they had had a gambling problem at some time. This is similar to the rate of problem self-awareness found in the 1991 national survey (Abbott & Volberg, 1991; 1992; 1996).

Of the 33 people who considered that they had in the past and/or currently experienced gambling problems, 20 (61%) reported having periods of six months or more when they were free or mostly free of problems. A half said they stopped gambling at these times.

Seventeen of the 20 who reported having been free or mostly free of gambling problems for a period of six months or more said this had been accomplished by their own efforts.

Specialist help was mentioned in 11 instances. Help of this kind mentioned by more than one respondent included mental health professionals, GA or GAMANON and alcohol or drug treatment centres. One respondent mentioned family and one mentioned friends.

Because respondents who had had periods when they were free or largely free of gambling problems could give more than one method by which these changes were accomplished, they were asked which was the most effective method. Of the 18 who responded to this question, 15 said their own efforts had been most effective, two mentioned an alcohol or drug treatment centre and one said none had been most effective.

In addition to asking participants about how they had overcome problems at the time they had had periods of problem remission, all people who acknowledged having had a gambling problem were asked if they had ever received help for their problem gambling. They were also asked how helpful this help had been.

Six people said they had sought help from their family and, in all cases, this was rated as having been very helpful. Four mentioned mutual support groups. One considered this to have been very helpful, and three somewhat helpful. Three said they had consulted a mental health professional and two considered this to have somewhat unhelpful and one very helpful. Two referred to alcohol or drug treatment centres and one rated this as very helpful and one as somewhat helpful. Medical doctors and the gambling helpline were the only other forms of external assistance mentioned by more than one person. Two said they had consulted a doctor. One said this had been somewhat unhelpful and one very unhelpful. A further two said they had contacted the gambling helpline and both rated this as having been very helpful.

About half of the 22 instances of external help-seeking involved contact with specialist mutual help or professional agencies. In the 1991 national survey, none of the 26 people in this category reported having sought this type of specialist assistance and only two people said they had sought help of any other kind for themselves (Abbott & Volberg, 1992). This suggests that there has been a considerable increase in help seeking on the part of people who recognise that they have problems. However, at least two-thirds of these people and, presumably most of the problem gamblers who do not recognise that they have problems, have apparently not sought this form of assistance.

Eleven people reported that they had at some time sought help for a total of 25 people that they considered to have gambling problems. Family (5 times) and friends (4 times) were mentioned most often and, with one exception, these sources were judged to be very or somewhat helpful. Mutual support groups were mentioned five times and on four of these occasions they were considered to be very or somewhat helpful and, on the remaining occasion, somewhat unhelpful. The gambling helpline was mentioned three times. Twice it was rated as very or somewhat helpful and once as somewhat unhelpful. Mental health professionals were also mentioned three times and twice this involvement was rated as somewhat helpful and once as very unhelpful. Other sources were not mentioned by more than one person.

The extent to which people sought help for other people with gambling problems appears to be similar to what it was in the 1991 national survey (Abbott & Volberg,

1992). As in that earlier study, family, friends and mutual support groups were mentioned most often. However, specialist services and practitioners were mentioned somewhat more often in the present study.

1. INTRODUCTION

1.1 Context

This is the sixth in a series of reports documenting the major findings of a programme of research, the New Zealand Gaming Survey (NZGS), conducted by a research consortium directed by Professor Max Abbott. Other consortium partners include Dr Rachel Volberg of Gemini Research, the National Research Bureau (NRB), Statistics New Zealand (SNZ) and Taylor, Baines and Associates.

The NZGS was commissioned by the Department of Internal Affairs (DIA). The Department administers New Zealand's three pieces of gaming legislation and services the Lottery Grants Board, which distributes the profits from the Lotteries Commission to the community. Most of the funding for the NZGS research programme derives from the undistributed profits of the Lotteries Commission (applied to the project at the direction of the Minister of Internal Affairs). Some funding also comes from the Problem Gambling Committee (PGC), an organisation with representation from all major sectors of the gaming industry and problem gambling treatment providers. Notwithstanding the sources of funding, the project director's contract is with the Crown through the DIA and neither the Department nor any other organisation is empowered to control the research or to exercise editorial control over the publication of the research findings.

The terms of reference for the NZGS were developed by the DIA in consultation with a variety of statutory, industry and national voluntary sector organisations. The intent of the research is to inform government policy on gaming and responses to problem gambling and contribute to local and international scientific knowledge concerning aspects of gambling and problem gambling. It is also expected to provide information that has relevance to a variety of other stakeholder and end-user organisations with an interest in gambling and/or problem gambling.

The other components of the NZGS include:

- Literature Review (Abbott & Volberg, 1999a)
- Longitudinal Followup (Abbott, Williams & Volberg, 1999)
- National Prevalence Survey: Phase One (Abbott & Volberg, 2000)
- Women's Prison Study (Abbott & McKenna, 2000)
- Men's Prison Study (Abbott, McKenna & Giles, 2000)
- Synthesis Report and Framework for Future Studies (in press).

The present report outlines and discusses findings from Phase Two of the National Prevalence Survey (NPS). Phase One of the NPS involved interviews, predominantly telephone interviews, with 6,452 New Zealanders aged 18 years and over. These interviews were conducted by Statistics New Zealand (SNZ) interviewers during 23 January to 21 March 1999. The findings of this phase of the NPS were published in the third volume of the NZGS series in June 2000 (Abbott & Volberg, 2000).

In Phase Two, 256 Phase One respondents were interviewed, face-to-face, by NRB interviewers, during April to June 1999, six to eight weeks after their Phase One interviews. Phase Two respondents included 74 lifetime probable pathological

and problem gamblers (problem gamblers), 93 people who reported gambling weekly or more often (regular gamblers) and 89 people who reported gambling less than once a week (infrequent gamblers).

The general aim of this study is to extend the information provided by Phase One of the NPS concerning the nature of gambling and problem gambling in the adult New Zealand population.

This is the second study completed to date, internationally, that has used a two-stage design involving follow-up interviews with substantial numbers of problem and non-problem gamblers drawn from a general population problem gambling prevalence study. The first two-stage study was undertaken in 1991 by Abbott and Volberg (1992; 1996).

Professor Abbott and Dr Volberg are also principal investigators, with Professor Sten Rönnberg, in a similar national survey in Sweden. This, like the present study, involves a two-phase design. In Phase One of both the Swedish and New Zealand surveys, large samples were randomly drawn from the national adult population and interviewed by interviewers from the respective country's official statistical agency. Relative to previous gambling and problem gambling surveys, these national surveys achieved high response rates. A report on the Swedish Phase One survey has been published (Rönnberg, Volberg & Abbott, et al, 1999) and, at the time of writing, data from Phase Two were being analysed. Sweden, like New Zealand, has recently introduced a variety of new forms of gambling and has similar per capita gambling expenditure to that of New Zealand. Some comparisons between the findings of Phase One of the New Zealand and Swedish surveys are made in Abbott and Volberg (2000). More detailed comparisons will be possible following completion of Phase Two of the Swedish study.

A previous DIA-commissioned national gambling and problem gambling prevalence survey was conducted in New Zealand during 1991, eight years prior to the present survey. While differing in some respects methodologically, the 1991 and 1999 national surveys are sufficiently similar to allow comparisons to be made. Major findings from the first phases of these surveys are compared in Abbott and Volberg (2000). Further reference to the 1991 and 1999 Phase One national survey findings will be made in the present report. In the discussion section, some comparisons will also be made with findings from Phase Two of the 1991 survey.

Prior to the 1999 New Zealand NPS, 14 repeat or 'replication' surveys of community gambling participation and problem gambling had been completed internationally (Abbott & Volberg, 1999a; 2000). The NPS differs from previous studies of this type in that it involved two phase designs in both 1991 and 1999, is national in scope, attained a high response rate, and, in 1999, used statistical procedures to account for sample complexity and the more precise estimation of confidence intervals for small and large proportions.

Repeat ('replication') surveys employ an initial (baseline) study followed by one or more subsequent surveys, typically a number of years apart, using similar or identical methods. As discussed in Abbott and Volberg (2000), this type of investigation provides probes of the population at different points of time, thus enabling changes over time in the prevalence of gambling participation and problem gambling to be assessed. These studies also facilitate comparison over time of the characteristics of people who engage in certain forms of gambling and who experience gambling problems.

Longitudinal studies, that involve repeat assessment of the same sample of people, also allow the assessment of change over time. The NZGS includes the first longitudinal survey of problem and non-problem gamblers conducted to date (Abbott, Williams & Volberg, 1999). The participants in this survey had initially been interviewed for Phase Two of the 1991 national survey (Abbott & Volberg, 1992; 1996). Some reference will also be made to the findings from this longitudinal survey in the present report.

The first part of a two-phase or double sampling survey is similar to that of other general population prevalence surveys. There have been many single phase surveys in the gambling studies field. They have been largely confined to North America, Australia, New Zealand and a few European countries (Abbott & Volberg, 1999a; 2000; Shaffer, Hall & Vander Bilt, 1997). The large majority of these studies have involved telephone interviews. The present study and the two other two-phase gambling surveys have also relied primarily on telephone interviews in their first phase (Abbott & Volberg, 1992; 1996; Rönnberg, Volberg & Abbott et al, 1999). In the second phase of these studies, smaller sub-samples, drawn from the first phase, were re-interviewed face-to-face in greater depth.

Two-phase designs enable more extensive information to be collected from respondents who are of interest to the investigator, for example, problem gamblers and people who gamble frequently but do not experience problems. They are of particular value when the phenomenon being studied is rare or relatively rare in the sampled population. In epidemiological surveys, by supplementing initial screening measures with clinical examinations and/or additional screening tests, this type of design also has the potential to increase understanding about what particular screens or tests are measuring. In other words, they can assist in the validation of measurement instruments. In some situations, it is also possible to use information of this type to refine problem gambling prevalence estimates obtained from phase one surveys (Abbott & Volberg, 1996; 1999b; Gambino, 1999a; 1999b).

Although two-phase surveys are widely advocated and not uncommon in the general field of epidemiology, as indicated previously, they are rare in gambling studies. In large part, this rarity is probably a consequence of their high cost and relative difficulty in execution.

1.2 Gambling and Problem Gambling

Introduction

This report, in common with the report based on the Phase One findings (Abbott & Volberg, 2000), is concerned with gambling and problem gambling. These terms have been variously defined and definitions have changed over time in response to shifting theoretical formulations and increased knowledge. In this section, such matters are briefly considered. More extensive discussion is provided in Abbott and Volberg (1999a; 2000).

Gambling

Gambling and gaming are terms that are sometimes differentiated but which are used interchangeably in this and other NZGS reports. Gambling refers to a wide variety of activities that have in common the placing at risk of something of value in exchange for something of greater value (Thompson, 1997). Unlike other high-risk undertakings, for example starting a new business venture, gambling activities are typically presented and perceived as recreation or entertainment. They are also generally regarded as forms of gambling within wider society.

Although some tribal societies do not appear to have had a history of gambling, gambling activities have been recorded in accounts of the major civilisations of antiquity throughout the world and have almost universal distribution today (Abbott & Volberg, 1999a). In the New Zealand context, it is of interest that pre-European Māori and some other Polynesian cultures apparently number among those that do not have a tradition of gambling as it is defined above (Abbott & Volberg, 1999a; North Health, 1996).

Other than in most Islamic states, legalised gambling proliferated rapidly throughout the world during the latter part of the Twentieth Century. Abbott and Volberg (1999a) argue that a variety of inter-related developments and trends, operating on a global scale, make the current expansion qualitatively different from previous phases of gambling proliferation. They maintain that these global forces blur traditional distinctions between different forms of gambling and make them difficult to regulate. While noting growing concern on the part of authorities and communities about actual and perceived negative aspects of increased gambling participation, they conclude that further expansion is likely, at least during the next five to ten years (Abbott & Volberg, 1999a).

Despite an increasing trend towards convergence and a tendency for researchers and members of the wider community to group gambling activities together, there are considerable differences between gambling activities. In addition to differences between gambling activities per se, these activities occur in varying socio-cultural contexts. They take place in diverse physical and social settings, appeal to different sorts of people and are perceived in a variety of ways by both participants and observers (Abbott & Volberg, 1999a).

Accumulating evidence indicates that some types of gambling are more strongly associated with the development of problem gambling than others (Abbott & Volberg, 1996; 1999a; 2000). This is one reason why it is important to recognise that gambling is not a unitary phenomenon.

Conceptual frameworks have been developed to categorise forms of gambling that possess common underlying attributes. Those with the widest currency and most relevance to problem gambling are the skill-luck and event frequency dimensions.

A number of researchers have differentiated gambling activities on the basis of the degree of skill and luck involved in the determination of outcomes (Volberg & Banks, 1994; Walker, 1992). Forms incorporating a high degree of skill include betting on games such as chess, darts and pool. Lotteries, bingo (including housie) and a number of casino games such as roulette, on the other hand, are varieties of gambling where

outcomes are determined by chance alone. Other forms, for example baccarat, poker and betting on horse and dog races and the outcomes of sports events, involve varying mixes of skill and luck. Apart from the degree to which skill and luck are actually involved in any given form of gambling, participants vary considerably in the extent to which they attribute such parameters to their own gambling (Abbott & Volberg, 1999a). Even when outcomes are entirely due to luck, many participants believe that they can influence them.

There is reason to believe that gambling forms involving an intermediate mix of skill and luck are more likely to lead to problem gambling for participants who engage in them on a regular basis (Walker, 1992). New Zealand findings provide corroboration for this hypothesis. Frequent track (horse and dog race) betting, for example, has consistently been found to be strongly linked to problem gambling (Abbott & Volberg, 1991; 1992; 1996; 2000) and to predict the persistence of problems over time (Abbott, Williams & Volberg, 1999).

Event Frequency refers to the number of opportunities to gamble during a specified period of time. A number of gambling forms, for example gaming machines, involve very rapid cycles of stake, play, determination of outcome and opportunity to re-invest. Other forms are considerably slower. Event frequency may be regarded as a continuum. However, researchers often classify gambling activities as being either continuous or non-continuous (Abbott & Volberg, 1991; 1992; 1999a). Continuous forms, in addition to gaming machines, include most casino games, cards and betting on the outcomes of events that allow frequent 're-investment' of winnings. Instant or scratch lotteries are included in this category, although most forms of raffle or lottery, such as Lotto, are classified as non-continuous.

Research has also shown that event frequency is an important factor in the development of problem gambling (Abbott & Volberg, 1999a). In New Zealand and Australia, regular gaming machine participation has a particularly strong association with problem gambling (Abbott & Volberg, 1991; 1992; 1996; 2000; Productivity Commission, 1999). Increased gaming machine participation on the part of women has been implicated in the convergence of male and female problem gambling prevalence rates in both countries (Abbott & Volberg, 2000; Productivity Commission, 1999). While gaming machine participation is strongly linked to problem gambling development, Abbott, Williams and Volberg (1999) found that problem gamblers who predominantly engaged in gaming machine play had a better outcome seven years later than those who favoured track betting.

The first NZGS report provides an overview and critique of international and New Zealand studies of gambling participation and attitudes towards gambling in the general population (Abbott & Volberg, 1999a). Abbott, Williams and Volberg (1999) examine changes in gambling participation from 1991 to 1998 among frequent non-problem and problem gamblers. Abbott and Volberg (2000) provide detailed information on gambling participation and attitudes towards gambling on the part of adult New Zealanders in 1999. The latter study also makes comparisons with participation findings from the earlier 1991 national survey and other New Zealand general population surveys. Abbott and McKenna (2000) and Abbott, McKenna and Giles (2000) examine gambling participation, both prior to and during imprisonment, of recently incarcerated male and female prisoners.

Problem Gambling

Problem gambling, like gambling, has a long pedigree. It has been documented in historical accounts and works of fiction from a variety of societies (Abbott & Volberg, 1999a; Wildman, 1998). Although the realisation that gambling participation can lead to a range of personal, social and legal problems has a long history, it is only relatively recently that problem gambling has received serious attention from health professionals, governments and members of wider society.

Pathological Gambling was first officially recognised as a mental disorder in 1977 (9th Edition of the International Classification of Diseases). This was followed in 1980 by its inclusion in the 3rd Edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-III). Since 1980, it has retained its classification as a Disorder of Impulse Control, although the specific diagnostic criteria have changed somewhat (American Psychiatric Association, 1980; 1987; 1994). These changes are summarised in Abbott and Volberg (2000). Currently, the essential characteristics of pathological gambling are deemed to include:

- A continuous or periodic loss of control over gambling
- A progression, in gambling frequency and amounts wagered, in the preoccupation with gambling and in obtaining moneys with which to gamble, and
- Continuation of gambling involvement despite adverse consequences.

A formal diagnosis of pathological gambling is determined by a mental health professional following a clinical interview with a patient or client in which specific signs and symptoms are identified. Typically, information from an interview will be augmented by additional information obtained from relevant clinical documentation and interviews with family members and/or other people who know the patient well. To make a diagnosis of pathological gambling, the clinician is required to establish that the patient meets a specified number of diagnostic indicators. In the most recent (1994) version of the American Psychiatric Association manual (DSM-IV), ten criteria are specified (see Figure 1). Meeting any five qualifies for a diagnosis, as long as the clinician is able to rule out the possibility that the person's problematic gambling behaviour is not better explained by a manic episode.

Figure 1: DSM-IV Diagnostic Criteria for Pathological Gambling

A. Persistent and recurrent maladaptive gambling behaviour as indicated by five (or more) of the following:
   1. Is preoccupied with gambling (e.g. preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
   2. Needs to gamble with increasing amounts of money in order to achieve the desired excitement
   3. Has repeated unsuccessful efforts to control, cut back or stop gambling
   4. Is restless or irritable when attempting to cut down or stop gambling
   5. Gambles as a way of escaping from problems or relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression)
   6. After losing money gambling, often returns another day to get even ('chasing' one's losses)
   7. Lies to family members, therapists, or others to conceal the extent of involvement with gambling
   8. Has committed illegal acts such as forgery, fraud, theft or embezzlement in order to finance gambling
   9. Has jeopardised or lost a significant relationship, job or educational or career opportunity because of gambling
   10. Relies on others to provide money to relieve a desperate financial situation caused by gambling

B. The gambling is not better accounted for by a manic episode.

In contrast to the situation with alcohol dependence and most other mental disorders, there is no requirement for the clinician to establish that the diagnostic criteria have been met during a specified interval of time, for example, during the past 12 months. Instead, the diagnosis is based on the patient's cumulative lifetime experience of gambling-related problems. This reflects an underlying assumption that pathological gambling is a chronic or chronically relapsing disorder.

While problem chronicity is undoubtedly a reality for many people with severe gambling problems, Abbott, Williams and Volberg (1999) found that the majority of their community sample of 1991 problem and probable pathological gamblers no longer reported gambling problems when reassessed seven years later. Furthermore, none of these people had received professional treatment for problem gambling. However, those with more serious gambling problems, those with concurrent alcohol problems and those who favoured track betting had worse outcomes, and many problem gamblers continued to experience, or developed, alcohol problems. Follow-up studies of problem gamblers who have received treatment have also found that significant numbers no longer experience problems. This includes some problem gamblers who continue gambling (Abbott & Volberg, 1999a; Abbott, Williams & Volberg, 1999).

The 'natural history' of alcohol dependence and abuse has been more extensively studied than problem gambling (Abbott & Volberg, 1999a; Vaillant, 1995). As with alcohol problems, it appears that there are a variety of long-term outcomes for pathological gamblers. Some have persisting, possibly lifelong disorders, others have chronically relapsing disorders that include periods of problem reduction or remission, others retain problems of lesser severity for prolonged periods of time and yet others overcome their problems and do not have relapses. Abbott, Williams and Volberg's (1999) findings suggest that alcohol problems may 'replace' gambling problems in some instances or persist when they occur concurrently with pathological gambling. This could also be the case for other co-morbid psychiatric disorders.

The term problem gambling is used in various ways. In this and the other NZGS reports, it refers to all patterns of gambling behaviour that have an adverse effect on one or more of general health, personal, family, vocational or wider social activities. As stated in Abbott and McKenna (2000):

> Such problems vary in severity and duration and can be regarded as lying on a continuum from minor and transient to serious and of long duration. Pathological gambling, in this context, can be regarded as a sub-category of problem gambling (p.18).

In the present report, problem gambling will be used in this way as well as to refer to problems that fail to reach DSM diagnostic criteria for pathological gambling, yet which have an adverse impact on one or more spheres of life. In some places, the term will also be used to refer to all people who score above a specified threshold on a problem gambling screening test. In these instances it will include people with severe problems who would be likely to be diagnosed as pathological gamblers if assessed by a suitably trained clinician, as well as people with problems of less severity. The particular meaning should be evident from the context in which it is used.

The Measurement of Gambling Problems

Many different methods have been developed to measure problem gambling. A detailed account of measurement procedures that have been used in clinical and research contexts is provided in Abbott and Volberg (1999a) and Rönnberg, Volberg and Abbott et al (1999).

The problem gambling measure that has been most thoroughly validated is the South Oaks Gambling Screen (SOGS) and subsequent SOGS modifications, particularly the SOGS-R (Abbott & Volberg, 1991; 1992; 1999a; 2000). The SOGS and SOGS-R are also the most widely used measures in research and clinical settings (Abbott & Volberg, 1999a; Shaffer, Hall & Vander Bilt, 1997).

The SOGS was developed in the United States as a screening instrument for use in clinical situations (Lesieur & Blume, 1987). It was based on DSM-III diagnostic criteria for pathological gambling. The SOGS was demonstrated to have high internal consistency and test-retest reliability and to correlate strongly with independently determined DSM-III-R diagnoses. Shortly after its development, this measure was adapted for use in community surveys.

The original SOGS, like DSM diagnoses of pathological gambling, provided a lifetime measure. It did not specify a particular timeframe within which problem gambling behaviours and experiences had to occur. The SOGS-R, developed for the 1991 New Zealand national survey (Abbott & Volberg, 1991; 1992; 1994; 1996), included the addition of a current (past 6 months) scale to complement the lifetime measure. Retention of the lifetime scale provided continuity with earlier research and facilitated the comparison of findings across a substantial number of studies. The new six months measure enabled problem gambling research to be consistent with common practice in psychiatric epidemiology. In the case of other mental disorders, epidemiological surveys typically provide current prevalence estimates as well as estimates for longer time periods.

The addition of the six months measure to the original SOGS also allowed comparisons to be made between current and lifetime prevalence estimates. As with other illnesses and mental disorders, the difference between lifetime and current prevalence estimates was considered to provide an indication of recovery from gambling problems over time (Abbott & Volberg, 1991; 1996; 1999a). However, some of the findings from the NZGS longitudinal survey suggest that, at best, such assessments of change are likely to be highly conservative. This conclusion arose from the finding that a substantial number of people who were classified as probable pathological gamblers and problem gamblers on the basis of their lifetime SOGS-R score in 1991 were classified as non-problem gamblers when re-administered the lifetime scale seven years later (Abbott, Williams & Volberg, 1999). This finding applied particularly to people who, when reassessed in 1998, no longer currently experienced problems. This suggests that a moderate number of past problem gamblers who no longer experience problems either forget or choose not to report their past problems.

The SOGS consists of 20 scored items. The SOGS-R employs the same 20 items but presents them in both lifetime and past six months formats. Since the development of the SOGS-R, most investigators have substituted a longer 12 months timeframe (Abbott

& Volberg, 1999a). This substitution was made because Abbott and Volberg (1992; 1996) found that the shorter timeframe produced a relatively large number of false negatives when used in a community setting. False negatives are people that are assessed, on the basis of their screening test results, as not experiencing a particular problem or illness but who are found to have this problem or illness when subsequently examined more thoroughly by an independent assessor. However, in the case in point, some uncertainty prevails because it is not known whether the follow-up (phase two) assessment by lay interviewers using DSM-III-R diagnostic criteria provided a more definitive measure of problem gambling than the SOGS-R did (Abbott & Volberg, 1999b). Furthermore, it has not been determined that the 12 month measure performs better in this regard than the six month version does. Typically, in general population surveys, both the six and 12 month SOGS-R scales yield similar prevalence estimates that are a third to a half their lifetime counterparts (Abbott & Volberg,1999a).

People with scores greater than four on the SOGS or SOGS-R are usually classified as probable pathological gamblers. The same cut-off score is used for both the lifetime and current scales. Inclusion of 'probable' here is to distinguish this group from pathological gamblers identified on the basis of a clinical interview. People who score three or four on these measures are typically referred to as problem gamblers. Those who score zero, one or two are considered to be non-problem gamblers (Abbott & Volberg, 1999a).

Since the advent of the DSM-IV in 1994, some new measures of problem gambling have been developed based on the diagnostic criteria outlined in the DSM-IV manual. While it is likely that measures based on the DSM-IV or future DSM revisions will replace the SOGS-R, to date none of these measures have been as fully developed as the SOGS and SOGS-R with respect to their psychometric properties and validation in a variety of settings (Abbott & Volberg, 1999a). Furthermore, only a few studies have used any of these new DSM-IV based instruments alongside the SOGS or SOGS-R. Although these studies generally obtained high correlation between one of the new measures (the Fisher DSM Screen) and the SOGS-R, further investigation is required. The NZGS prison studies also found that a large majority of people classified as probable pathological gamblers on the basis of their SOGS-R performance were similarly classified by the Fisher Screen (Abbott & McKenna; 2000; Abbott, McKenna & Giles, 2000). From the findings to date, the Fisher Screen and the SOGS-R appear to be measuring the same underlying construct.

1.3 Gambling and Problem Gambling in New Zealand

While much remains to be discovered about gambling and problem gambling in New Zealand, the country is better served than most with respect to research on these topics. Information on gambling expenditure and participation is provided by the annual collection of turnover and expenditure data on major forms of gambling by the DIA and a number of national adult population surveys that have been conducted since 1985. Information on problem gambling is provided by the annual collection of detailed information about people who seek help from the national gambling telephone helpline and specialist counselling centres throughout the country. A number of problem gambling surveys have also been conducted since the mid 1980s, including two national surveys of the adult population. Information from these various sources is summarised and critiqued, along with research from other countries, in Abbott and Volberg (1999a; 2000) and Abbott, Williams and Volberg (1999). Information on women's gambling and

problem gambling is provided in Abbott and McKenna (2000). However, this study is primarily concerned with problem gambling and links between gambling and criminal offending on the part of recently imprisoned New Zealand women. A further report in the NZGS series (Abbott, McKenna & Giles, 2000) examines these matters with respect to recently imprisoned men in four New Zealand prisons.

Most of the information included in these NZGS reports that pertains to gambling and problem gambling in New Zealand is not repeated in the present volume. However, given their direct relevance to the present study, mention is made of some methodological features of and findings from both Phase One and Phase Two of the 1991 national survey (Abbott & Volberg, 1991; 1992; 1996), Phase One of the 1999 National Prevalence Study (NPS) (Abbott & Volberg, 2000) and the longitudinal follow-up of people from Phase Two of the 1991 survey (Abbott, Williams & Volberg, 1999). Apart from information concerning Phase One of the 1999 NPS which follows, these aspects of the other surveys are provided in Appendix One.

The 1999 National Prevalence Survey: Phase One

Introduction

Abbott and Volberg (1991; 1992) stressed the importance of conducting repeat prevalence surveys to assess changes in problem gambling prevalence rates over time. However, it was not until 1999 that another comprehensive national survey was completed.

Since the 1991 national survey, new forms of gambling had been introduced and official gambling expenditure on major forms of legal gambling increased substantially. Total and relative expenditure on these forms for 1984, 1991 and 1998 is shown in Figure 2. Following publication of the 1991 national survey, specialist problem gambling services were established in New Zealand. Utilisation data from these services have been reported annually since their establishment and are summarised in Figure 3. The increases in expenditure shown in Figure 2, especially on continuous forms of gambling, and steady rise in first presentations to the national gambling helpline and clinics throughout the country, strengthened Abbott and Volberg's (1992) expectation that problem gambling prevalence rates would be higher in 1999 than in 1991.

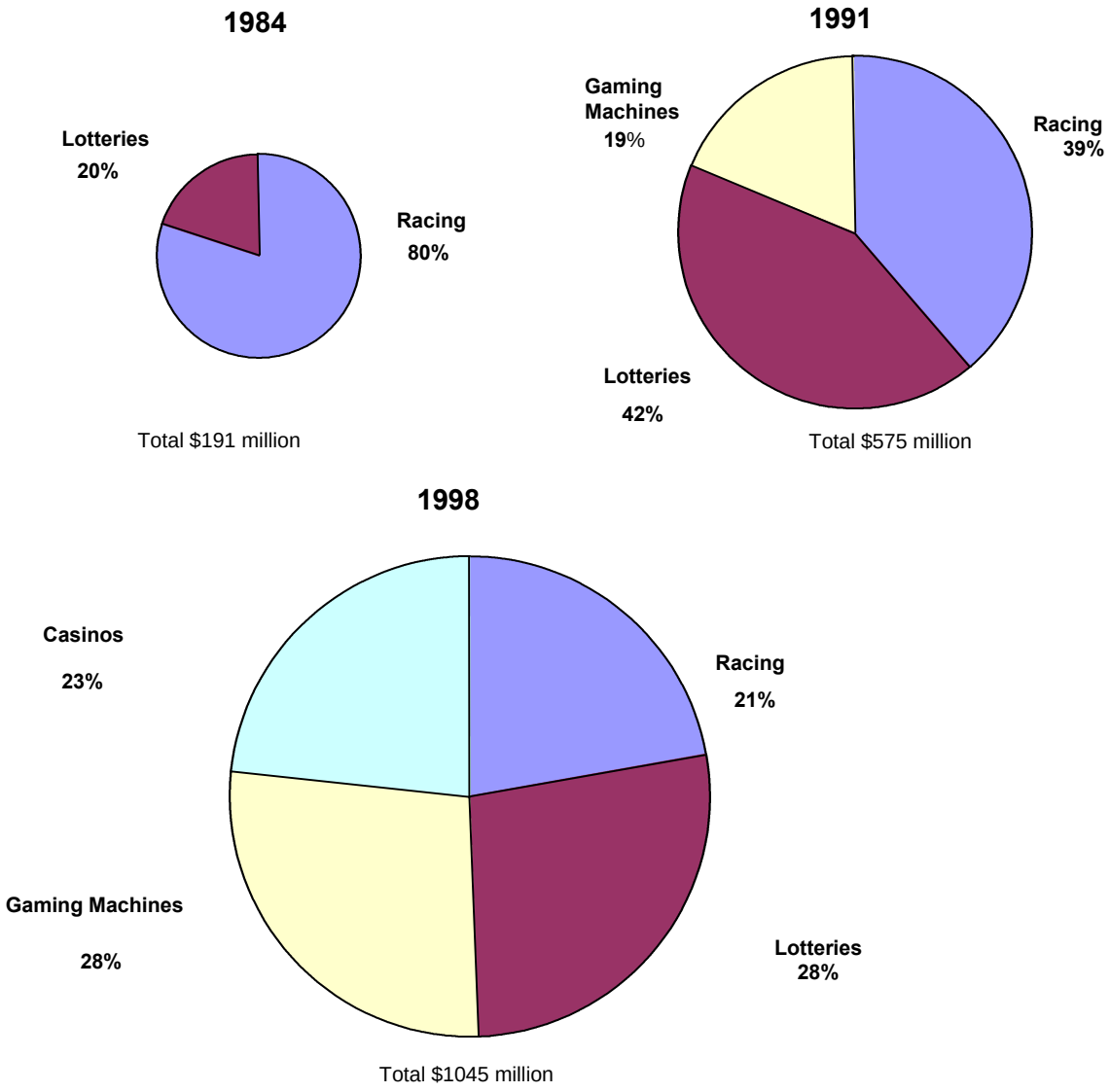
However, the findings of the 1998 longitudinal survey suggest that problem and pathological gambling, especially the less severe forms that characterise the majority of problem gamblers in community as opposed to clinical settings, are more transient than was previously believed to be the case.

This led Abbott, Williams and Volberg (1999, p32) to suggest:

> An alternative hypothesis is that many young problem gamblers will 'grow out' of their problems. It is also conceivable that as people and society more generally obtain increased experience with the new forms of gambling, adaptations will be made that enable problems to be more readily countered or contained. Increased public awareness of problem gambling and its early warning signs, the development of informal social controls and the expansion of treatment and self-help options, may play a part in this process. Under this more optimistic scenario,

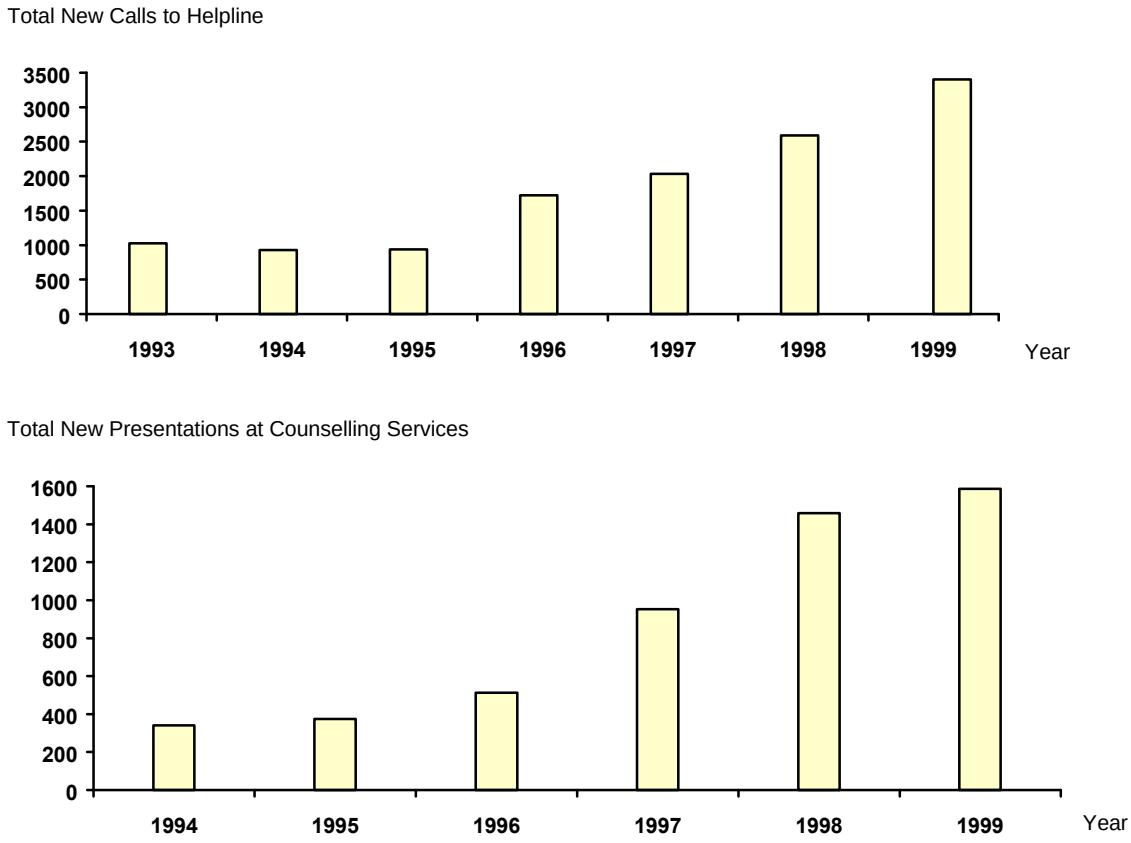
the proposed relationship between rising participation and increasing problems may be attenuated or, possibly, reversed.

Figure 2: Total gambling expenditure and relative expenditure on major forms of gambling in New Zealand, 1984, 1991 and 1998



Note: Prepared from information provided by the Department of Internal Affairs

Figure 3: New Calls to National Problem Gambling Helpline, 1993-1999, and Counselling Services Utilisation, 1994-1999



Aims

The 1999 NPS Phase One aims and methodology are described in some detail because the Phase Two participants were recruited from the larger Phase One sample.

Phase One of the 1999 NPS was undertaken primarily to provide reliable estimates of:

- the prevalence of probable pathological and problem gambling in the adult New Zealand population
- the proportions of adults who have never gambled, gamble infrequently, gamble frequently on non-continuous forms and gamble frequently on continuous forms
- the proportions of adults who participate in the most popular forms of gambling once a week or more

and to provide a solid baseline to enable assessments of future changes in the national prevalence of problem gambling and gambling participation to be made.

The survey was also designed to provide the following information at a lower level of accuracy:

- A sociodemographic profile of problem and probable pathological gamblers
- A measure of change in the prevalence of problem and probable pathological gambling since the 1991 national survey
- The proportion of lifetime probable pathological gamblers who are (a) current problem gamblers and (b) not currently experiencing problems
- The proportion of current probable pathological gamblers who recognise that they have a problem and the proportion who do not recognise that they have a problem
- The prevalence of lifetime and current problem and probable pathological gambling within subgroups including males, females, Māori, Pacific Island and Asian people, major occupational groupings and unemployed people
- Selected risk factors for problem gambling and probable pathological gambling
- A measure of changes in reported gambling participation and expenditure since 1991
- The ability to compare the 1999 findings with the findings of previous studies conducted in New Zealand
- The ability to compare the findings with the findings of previous studies conducted in other countries.

Another important aim of Phase One was to recruit participants for the Phase Two survey that is reported in this volume.

Methodology, Sample and Data Analysis

In Phase One of the NPS 6,452 adults aged 18 years and older were interviewed during 23 January to 21 March 1999. The large majority of interviews were conducted by telephone and the procedures used and questions asked were, for the most part, the same as or similar to those included in the 1991 national survey.

Prior to starting the NPS, extensive preparatory work was undertaken. This work included:

- Completion of a critical review of previous gambling and problem gambling surveys conducted internationally (Abbott & Volberg, 1999a)
- Undertaking cognitive testing and modification of the draft Phase One questionnaire

- Obtaining internal and external peer review of the proposed survey methodology

- Obtaining ethical approval for the survey and permission to proceed from the Minister of Statistics

- Conducting two pilot studies to assess various aspects of the proposed survey methodology and evaluate procedures introduced to enhance the response rate.

The major concern was to conduct a high quality probability survey that had a response rate in excess of 70 percent and that would incorporate advances in knowledge about gambling and problem gambling since 1991 yet facilitate comparison of major findings between the 1991 and 1999 national surveys. These multiple objectives generated some tensions that required trade-off in the final design of the survey. This is discussed further in Abbott and Volberg (2000). Information on the cognitive pre-testing and pilot studies is also provided in Abbott and Volberg (2000).

The survey population was the New Zealand on-shore, non-institutionalised, usually resident population aged 18 years and over living in households that have a non-mobile listed telephone for private use at the time of sample selection. A stratified, two-stage sample design was used, with 18 Telecom directories as strata. Numbers were randomly drawn from each latest updated electronic directory, in proportion to the number of listed, residential phone numbers contained in that directory.

For each household contacted, a list of eligible household members was made and, using a selection grid method (based on the Kish procedure), one person was randomly chosen to take part. Up to eight telephone calls were made to establish contact with the household. Selected persons were advised that their participation was voluntary and they were given the option of being interviewed in a language other than English. Eleven such interviews were conducted. A maximum of five calls were made to contact the selected respondent. Substitutions were not allowed. In a small number of cases (41 instances), when requested by respondents or when there were language or hearing difficulties, face-to-face interviews were undertaken in the respondents' homes.

As indicated previously, the response rate (estimated eligible rate) for the Phase One survey was 75 percent. The formula used and related information is given in Abbott and Volberg (2000). The achieved sample, as with previous national surveys in New Zealand, contained some under-representation of younger adults, Māori, Pacific Islanders and Asians. Older adults, Europeans and people of other ethnicities (apart from Māori and Pacific Islanders) were somewhat over-represented. These differences arise for various reasons. Māori and Pacific Islanders have lower levels of access to residential telephones (both approximately 85% compared to 96% for the remainder of the adult population). Māori and Pacific Islanders also, on average, live in larger households including households containing more than two adults. As a consequence, under-representation occurs when only one household member is interviewed. Younger adults also more often live in households with multiple adults resident whereas older adults are more likely to live alone. These departures from actual representation within the adult population were adjusted for statistically by using inverse probability of selection weighting. It is also possible that people in some or all of the under-

represented groups more often declined to be interviewed. Subsequent sample weighting can only partially correct for likely effects of this form of under-representation.

Pre-notification letters, signed by the Government Statistician, were sent to the large majority of households selected for inclusion in the survey. Householders were advised that their household had been chosen to take part in an important social survey and that an interviewer would contact them by telephone some time during the next month. Thirty-eight decentralised Statistics New Zealand interviewers who had received special training for the survey conducted the interviews. Their performance was carefully checked in a variety of ways. This included re-contacting 959 households to determine whether or not interviews had been completed and survey rules complied with. Some questions were repeated as a check on reliability.

Two questionnaires were used in the Phase One survey. The Household Form was used to select eligible Phase One respondents via the Kish grid method and provide information that assisted the selection of respondents for the Phase Two of the NPS. The Personal Questionnaire contained groupings of questions concerning gambling participation, problem gambling, help seeking, other peoples' problem gambling, general life satisfaction and respondent sociodemographic attributes. The SOGS-R was the major problem gambling measure included in the interview. Copies of these questionnaires are included in Abbott & Volberg (2000) along with details concerning data processing, namely data capture, edits and imputation, classification and definitions, coding and combined and derived variables.

Each of the 6,452 interviewed participants was assigned a unique survey weight. These weights were used in producing survey estimates. The most important functions of the weights were to:

- Adjust the sample to represent the whole target population
- Account for different probabilities of selection
- Account for different non-response between sub-populations.

The steps involved in calculating the sample weights were:

- Calculation of basic selection weights as the inverse of selection probability
- Adjustment for household non-response
- Adjustment for multiple telephone lines
- Adjustment for the selection of one person per household
- Calibration of weights to population benchmarks.

Estimates obtained from Phase One of the NPS are based on a sample of households and individuals within households. Had the same questionnaire and methods been used to obtain interviews with all of the people in the eligible population that was sampled (i.e. a complete census), somewhat different figures might have been obtained. The variability of a survey estimate due to the random nature of the sample selection is measured as its sampling error. It is sound statistical practice to provide an indication of the magnitude of this error. In practice, in gambling studies and other health and social surveys, sampling errors are either not provided in published accounts, or, more frequently, they are incorrectly estimated.

Given a certain sample size, the level of sample error for any given variable depends on the number of sampled respondents in the category of interest and the design effect for that variable. The design effect measures the performance of a complex sample design. It is the ratio of the variance under the complex sample design to the variance under simple random sampling.

As mentioned earlier, the Phase One survey, like almost all published general population gambling surveys conducted to date, used a complex sample design. In the present case, sampling within households added extra complexity to the design. This was dealt with by estimating sample errors for key outputs, e.g. problem gambling prevalence rates, by using the jackknife method rather than standard analytic formulae. This method took account of all aspects of the sample design and the estimation process, including stratification, the two-stage selection procedure (households and selected respondent within households) and weighting adjustments. While computer intensive, the jackknife is flexible and can be used for a variety of simple estimates (totals, means, proportions and rates) as well as for complex statistics (e.g. chi-squares and regression coefficients).

Many of the findings reported in the Phase One survey involve proportions, for example the proportion of people in different sociodemographic categories who are frequent continuous gamblers or probable pathological gamblers. The jackknife method usually yields reliable estimations of variance (sample errors) for proportions and, as mentioned above, most other descriptive statistics. Sample errors, calculated this way, are used for most descriptive statistics reported in the Phase One report and provide an indication of their reliability.

While the jackknife performs well with respect to the determination of sample errors associated with descriptive statistics provided in the Phase One report, statistical inference requires the construction of confidence intervals. Inferential statistics are used for such purposes as examining the strength and significance of relationships between different variables and change over time on the same measure. In most situations, where sample sizes are large and proportions are not very small (close to zero) or very large (close to one), confidence intervals can be readily determined by using a normal approximation (via the Central Limit Theorem argument). However, if proportions are very small or large, this approximation may be inappropriate because estimators are often not normally distributed at these extremes. Probable pathological gambling, for example, is a relatively rare phenomenon in the general population.

Where proportions are very small or large, alternative methods can be substituted to provide more accurate and stable confidence intervals. In the Phase One report, a procedure recommended by Korn and Graubard (1998) was used to estimate confidence intervals for problem and probable pathological gambling prevalence and some other estimates.

In the Phase One study, because many of the variables related to problem gambling and other measures of theoretical or practical interest were themselves inter-related, a number of multivariate analyses were conducted. Because of the sample complexity specialised statistical software was required to undertake these analyses. The WesVar [Complex Samples (v3.0)] package was used for this purpose. Confidence intervals for key variables were also estimated using the Sudaan package. This statistical package

has also been developed to take account of the peculiarities of complex sample designs and low and high estimates.

Almost all general population gambling surveys are technically complex, typically involving multi-stage, stratified cluster designs. The recent national Swedish survey (Rönnberg, Volberg & Abbott et al, 1999) is an exception. Despite sample complexity being the norm, from Abbott and Volberg's (1999a) review of the relevant international literature, **the 1999 Phase One survey appears to be the first general population survey in the gambling studies field to use appropriate statistical procedures to calculate variance estimates and analyse the survey data. It also appears to be the first survey in the field to use statistical procedures to take account of very low and very high estimates and provide accurate confidence intervals for these estimates.**

A number of gambling and problem gambling surveys have not weighted or fully weighted their samples to adjust for selecting only one person per household and under- or over-representation in various sectors of the population (Abbott & Volberg, 1999a). In these instances point estimates, such as percentages and means, will be incorrect. In recent years, most surveys do appear to have weighted their samples and, as a consequence, point estimates from these surveys are likely to be more accurate. However, failure to take account of sample complexity and high and low proportions means that the standard errors of measurement and confidence intervals pertaining to prevalence and other estimates from these surveys will be misleading and imply greater precision and reliability than is in fact the case. Furthermore, if inferential statistics were used in these studies to examine relationships between variables and assess their statistical significance, the results of these analyses will contain errors of variable and unknown magnitude.

The 1991 national survey used weights to bring the sample into line with expected population proportions for some major sociodemographic variables and over-sampled Māori and Pacific Islanders to partially compensate for their under-representation when using telephone interviews (Abbott & Volberg, 1991; 1996). However, like other previous studies, this survey did not employ statistical procedures to take account of the complexity of the sample design and low and high proportions. This omission, taken in conjunction with some differences in the design of the 1991 and 1999 national surveys, complicates comparison of the findings from these surveys. While adjustments were subsequently made to some of the major 1991 estimates to account for both sample complexity and low and high proportions, these adjustments could not be made with the precision that was possible in the case of the 1999 survey (Abbott & Volberg, 2000). Furthermore, these adjustments rested on assumptions that could not be fully verified. Nevertheless, it was considered that these modifications to the confidence intervals of selected 1991 estimates allowed comparison between some of the major findings of the two New Zealand surveys to be made with greater confidence than would otherwise have been the case.

While sampling errors and related statistical matters have been considered here at some length, a more significant source of bias and unreliability in estimates derived from sample surveys typically arises from non-sampling errors.

Errors unrelated to sampling can occur at virtually all phases of a survey's execution. Abbott and Volberg (2000, p.89) note:

Interviewers may misunderstand instructions, respondents may make errors in answering questions as a result of recall problems, distortions or intentional deception, data may be coded or entered incorrectly and errors may be introduced in the processing and tabulation of data.

If non-sampling errors are systematic rather than random, they will contribute to biases in survey estimates. If the types of non-sampling errors and their aggregate effects vary in surveys that are being compared, incorrect conclusions may be derived from these comparisons. In the 1999 national survey, considerable attention was given to procedures designed to reduce non-sampling errors (refer to Abbott & Volberg, 2000).

A major source of non-sampling error in surveys is the effect of non-response on the survey results (Abbott & Volberg, 1999a). Non-response varies from partial (failure to answer one or a few questions) to total non-response. In the case of the 1999 Phase One survey total non-response could occur because the selected household could not be contacted, the household refused to participate, or the selected respondent within the household refused to participate. Total non-response was dealt with by adjusting the weight of each household that responded to the survey to compensate for those that did not respond. Imputation methods were used to account for partial non-response. However, these statistical adjustments only partly account for potential non-response bias which, if systematic and large in magnitude, can significantly bias survey findings.

A serious concern in the gambling studies field arises from the low response rates that characterise the majority of gambling and problem gambling surveys. Shaffer, Hall and Vander Bilt (1997) reviewed all published North American problem gambling surveys and found that many did not report their response rate. Those that did rarely obtained rates in excess of 65 percent. This finding was confirmed in Abbott and Volberg's (1999a) international review. Indeed, many of the surveys they examined, especially those conducted in Australia, rarely exceeded 55 percent. More recent national prevalence surveys conducted in the United States (Gerstein et al, 1999) and Australia (Productivity Commission, 1999) have also had low rates (51% and 43% respectively). The potential for significant non-sampling error in these studies is, as a consequence, considerable. It was for this reason that high priority was given to obtaining a response rate in excess of 70 percent in the 1999 national survey.

The 1999 NPS Phase One response rate of 75 percent, while it appears to be the highest rate to date in this field, still leaves some room for bias to influence the survey findings, especially if non-response is related systematically to gambling participation and problem gambling. Abbott and Volberg (1999a; 2000) conclude that there are indications from their research and other studies that <u>both</u> people with little interest and low involvement in gambling and at-risk and problem gamblers may be less likely to participate in problem gambling surveys. If so, while these effects may cancel each other out, this cannot be assumed. Rather, this conclusion reinforces the importance of obtaining high response rates in gambling and problem gambling surveys.

Overview of Selected 1999 Phase One Survey Findings

The detailed findings from Phase One of the NPS are outlined and discussed in Abbott and Volberg (2000) and reference to these findings in the present report is selective and skeletal.

With respect to reported gambling participation, the 1999 overall lifetime participation estimate was 94.0 percent (93.4-94.6% confidence interval), similar to estimates obtained from the 1991 national survey (95%) and Departmental of Internal Affairs surveys conducted at five-yearly intervals between 1985 to 1995 (Wither, 1987; Christoffel, 1992; Reid & Searle, 1996, Department of Internal Affairs, in press). Past six months participation in at least one form of gambling was 86.2 (85.2-87.2) percent and weekly or more frequent participation was 40.8 (39.2-42.4) percent. Weekly or more frequent gamblers were considered further by dividing them into one of two mutually exclusive categories - regular non-continuous gamblers and regular continuous gamblers.

Regular continuous gamblers may also engage weekly or more often in non-continuous forms of gambling. While regular non-continuous gamblers may engage infrequently in continuous forms, if they do so weekly or more often they are excluded from this category and classified as regular continuous gamblers. In 1999 it was estimated that 30.3 (28.9-31.7) percent of adult New Zealanders were regular non-continuous gamblers and that another 10.5 (9.6-11.4) percent were regular continuous gamblers.

Table 1: Gambling Participation: 1991 and 1999 National Survey Results

Gambling Pattern	1991	1999
Non-gamblers	5%	6%
Infrequent Gamblers	6%	8%
Past 6 Months Gamblers	41%	46%
Regular Non-continuous Gamblers	30%	30%
Regular Continuous Gamblers	18%	11%

Reported gambling participation rates from the 1991 and 1999 national surveys are shown in Table 1. While confidence intervals were not constructed for the 1991 rates, it would appear that the proportions of people who had never gambled or who did not report gambling in the six months prior to the respective surveys evidenced little or no change. There appeared to be an increase in the proportion that reported having gambled during the past six months but not weekly or more often, and a decrease in the proportion that reported gambling weekly or more frequently. However, when the regular non-continuous and regular continuous groups are considered separately, it appears that no change occurred for non-continuous gamblers and that there was a moderately large decrease for continuous gamblers.

These findings imply that since 1991 there has been:

- A significant reduction in the number of adult New Zealanders who report gambling frequently on continuous forms
- No change in the number who gamble this often on non-continuous forms

- Some increase in those who report gambling less frequently than once a week on continuous and/or non-continuous forms.

This conclusion rests on the assumption that methodological differences between the two surveys and their attained samples do not appreciably influence differences in gambling participation.

Mean monthly reported gambling expenditure in 1999 was slightly higher than in 1991. Extrapolated to the total adult population, the estimated past year annual expenditure was NZ$1.16 billion, similar to the 1998 official figure of NZ$1.05 billion for major forms of legal gambling.

In 1999, males, people aged 55-64 years, Māori, employed people, people without formal educational qualifications, people in lower status occupations, Roman Catholics and Christchurch residents were among the groups over-represented in the regular continuous gambling category. These groups, with the exception of Christchurch residents, also contained higher percentages of people who reported spending large sums on gambling activities. Additional groups in the high expenditure category included Pacific Islanders and Auckland residents.

Relative to 1991, in 1999 adults aged 18-24 years reported spending substantially less on gambling and adults aged over 65 years reported spending moderately more. While men reported higher expenditure than women in both surveys, the gender difference in expenditure was much less in 1999.

In 1999, the <u>past six months</u> (current) SOGS-R defined probable pathological gambling prevalence estimate was 0.5 (0.3-0.7) percent and the past six months problem gambling estimate was 0.8 (0.6-1.1) percent. The corresponding lifetime estimates were 1.0 (0.7-1.4) percent and 1.9 (1.4-2.5) percent. Contrary to expectation, these rates were lower than in 1991.

Although approximately 1.3 percent of the population was estimated to be currently experiencing significant gambling problems in 1999, this group was responsible for 19 percent of total reported gambling expenditure. As predicted and found in 1991, people who reported frequent participation in and expenditure on continuous forms of gambling had markedly elevated current and lifetime rates of probable pathological and problem gambling. Approximately a quarter of people who reported weekly or more frequent non-casino gaming machine participation and a fifth of people who reported likewise with respect to track betting were lifetime probable pathological or problem gamblers. Other forms of frequent gambling participation associated with gambling problems included casino gaming machines, other casino games, card games, taking money bets with friends or work-mates on the outcomes of events, and TeleBingo.

Considered individually, males, Māori and Pacific Islanders, people aged 25-34 years, people living in households of five or more and Auckland residents had elevated rates of <u>lifetime</u> probable pathological and problem gambling. These risk factors were confirmed when multivariate analyses (multiple logistic regression and correspondence analysis) including all sociodemographic variables were undertaken. In these analyses, Christchurch residence, Catholicism, lacking formal educational qualifications and being born outside New Zealand, Europe, Australia and North America emerged as additional risk factors. In all of the logistic regression analyses conducted using Phase One data,

the probable pathological and problem gambling groups were combined. The decision to combine these groups was based on the outcomes of a series of discriminant function analyses ('naive', step-wise and reduced) and correspondence analyses that indicated that their separation was neither statistically nor logically justified (Abbott & Volberg, 2000).

Māori and Pacific Islanders, people in paid employment and people with vocational and trade qualifications were found to be at high risk for current probable pathological and problem gambling. Again, these factors were confirmed by multiple logistic regression and correspondence analyses. Christchurch residence, Catholicism, being born outside New Zealand, Europe, Australia and North America, and having a household income of NZ$40,001-$50,000 were additional risk factors identified in these analyses. Gender was not significant in the case of current probable pathological and problem gamblers.

In 1991, large percentages of probable pathological gamblers and problem gamblers were male, aged under 30 years, Pacific Islanders, Māori or unemployed. In 1999, Māori and Pacific Islander representation (44%) was similar to what it was in 1991. However, in 1999:

- Male current and lifetime probable pathological gamblers no longer outnumbered females although males remained over-represented with respect to problem gambling

- Young people aged 18-24 years, previously the age group with the highest prevalence rates, had the lowest rates after people aged 65 years and older

- No unemployed people were identified as current probable pathological gamblers and only 0.2 percent were current problem gamblers, whereas in 1991 29 percent of probable pathological gamblers were unemployed.

Current probable pathological and problem gambling prevalence estimates for males and females and young and older adults are given in Table 2.

Table 2: Comparison of Six Month Problem and Probable Pathological Gambling Prevalence Estimates from the 1991 and 1999 National Surveys

Selected Characteristics		1991 – Current Gambling Status			1999 – Current Gambling Status		
		No Problem	Problem	Pathological	No Problem	Problem	Pathological
New Zealand		96.7 (96.0, 97.3)	2.1 (1.7,2.7)	1.2 (0.9,1.6)	98.7 (98.3,99.0)	0.8 (0.6,1.1)	0.5 (0.3,0.7)
Age Group`	18-24	93.0 (90.1, 95.1)	4.0 (2.5, 6.4)	3.0 (1.7, 5.2)	98.9 (97.5, 99.7)	0.6 (0.1, 1.8)	0.4 (0.1, 1.6)
	25 plus	97.4 (96.8, 98.0)	1.7 (1.3, 2.3)	0.8 (0.6, 1.3)	98.7 (98.3, 99.0)	0.8 (0.6, 1.2)	0.5 (0.3, 0.8)
Sex	Male	96.0 (94.8, 96.9)	2.0 (1.4, 2.9)	2.0 (1.4, 2.9)	98.4 (97.7, 98.9)	1.2 (0.7, 1.9)	0.4 (0.2, 0.8)
	Female	97.0 (96.1, 97.7)	2.0 (1.4, 2.8)	1.0 (0.6, 1.6)	99.1 (98.5, 99.4)	0.4 (0.2, 0.7)	0.5 (0.2, 1.0)

In Table 2 adjustments have been made to the original 1991 data to partially account for sample complexity and low proportions to facilitate comparison with the 1999 findings.

Where the confidence intervals do not overlap, the differences are statistically significant. **Thus, there appear to have been significant reductions in both probable pathological and problem gambling for the adult population as a whole, and for people aged 18-24 years. In the case of males, there is a significant reduction for probable pathological gambling but not problem gambling. Older adults and females, while not showing significant reductions from 1991 to 1999 in current probable pathological gambling, have lower problem gambling rates**. **In 1999, in contrast to the situation in 1991, people aged 18-24 years no longer have significantly higher prevalence rates than people aged 25 years and older.**

A number of other risk factors for probable pathological and problem gambling, additional to gambling participation and sociodemographic variables, were identified. From multivariate logistic regression analyses, the strongest predictors of both current and lifetime problem gambling were:

- Gambles as a hobby or habit
- Usually gambles alone
- Someone in the respondent's life has a gambling problem.

Factors associated with a low probability of both current and lifetime problem gambling were:

- Usually gambles with friends or co-workers
- Usually gambles for less than one hour.

In the case of lifetime but not current problem gambling, there was high risk associated with first reporting gambling before the age of 13 years or at age 25 years or older. Gambling for excitement or challenge, usually gambling with other family members, and reporting first gambling in a casino or on gaming machines and first playing cards for money were further risk factors for lifetime problem gambling. In the case of current but not lifetime problem gambling, reporting first purchasing Instant Kiwi tickets was an additional risk factor.

In addition to the SOGS-R, a variety of other questions related to the problem gambling construct were included in the Phase One questionnaire. Seven percent of adults were estimated to have reported feeling nervous, at some time, about the amount of money they spent gambling. One-point-six percent indicated that they, themselves, considered that they had a problem with gambling in the past and 0.5 percent indicated that they considered that they had a problem currently. The former percentage is somewhat higher than the SOGS-R defined lifetime probable pathological gambling prevalence estimate. The latter is the same as the SOGS-R current probable pathological gambling estimate. These questions were also asked in the 1991 national survey. In that survey, two percent considered that they had had a problem at some time and one percent that they had a problem currently.

In 1999, 3.6 percent of adults said that they thought that their father may have or have had a gambling problem and 1.5 percent thought likewise with respect to their mother. In 1991, four percent thought that one or both of their parents had had a gambling problem at some time. The 1999 percentages for parents are higher than the percentages for the 1999 survey respondents themselves. While these findings might be regarded as suggesting that problem gambling was more widespread in the past,

they could mean that people are more willing to recognise and/or report other peoples' problem gambling than their own.

In 1999, 9.5 percent of adults said that they thought another close family member might have a gambling problem and 18.4 percent said likewise for a friend or someone else of their acquaintance. These questions were not asked in 1991. Responses to these questions indicate that over a quarter of adults have known someone in their family or wider social network that they consider was likely to have a gambling problem.

One percent of adults was estimated to have indicated that, at some point in their lives, they personally wanted help to stop gambling. Over a third of current probable pathological and problem gamblers and over a quarter of lifetime probable pathological and problem gamblers said that they had wanted help to stop gambling. A smaller percentage of adults (0.4%) said that they had tried to get help to stop gambling.

Discussion

Given the high response rate and technical quality of the 1999 national survey, the survey authors (Abbott & Volberg, 2000) concluded that the gambling participation and current and lifetime problem gambling prevalence estimates derived from this survey may be regarded as the most reliable presently available for the adult New Zealand population. However, they also outline technical and other reasons why they consider these estimates to be conservative.

The finding that regular participation in and high expenditure on various forms of continuous gambling, especially gaming machines and track betting, are major risk factors for problem gambling is consistent with the 1991 national survey findings. It is also consistent with self-reports of problem gamblers who have sought help in recent years from the national gambling helpline and specialist clinics throughout New Zealand (Gruys, Hannifin & MacKinnon et al, 2000). Clinical data from these sources also indicate a trend since the mid-1990s toward convergence in male and female first presentation rates, a finding that is in keeping with the lack of a significant gender difference in 1999 probable pathological gambling prevalence estimates.

The hypothesis that the introduction of casinos to Auckland and Christchurch would lead to an increase in gambling problems in these cities was also considered in the Phase One report. It has already been noted that regular casino gaming machine and table games participation were risk factors for problem gambling. The finding of higher prevalence estimates for probable pathological and problem gambling in Auckland and Christchurch when the effects of other risk factors were accounted for is consistent with this hypothesis.

Although frequent involvement in a variety of continuous forms of gambling was shown to be strongly associated with problem gambling, and the availability of and per capita expenditure on many of these forms have increased in recent years, the 1991 and 1999 national survey findings do not provide corroboration for the hypothesis that this increased availability and expenditure would result in elevated problem gambling rates. To the contrary, there appears to have been a significant reduction in the prevalence of probable pathological and problem gambling in the adult population. While unexpected, this change in prevalence was consistent with the finding of a reduction from 18 to 11

percent of the population who reported frequent participation in continuous forms of gambling.

The reduction in overall prevalence was largely due to large reductions for some previously high risk groups including young adults and unemployed people. The reductions in these groups are consistent with their lower reported gambling participation and expenditure in 1999 relative to 1991. Lower participation and expenditure on the part of young adults and beneficiaries, including unemployed people, were also evident in the 1995 Department of Internal Affairs survey mentioned previously. Abbott and Volberg (1999a; 2000) suggest that these reductions may be related to reduced levels of disposable income in these and other low income groups, associated with mid 1990s benefit reductions and a widening gap between low and high income groups. Prospective studies are required to explore such possibilities in more detail and enable stronger causal inferences to be made with respect to variables associated with problem gambling and changes in problem gambling prevalence over time.

Although no other national replication studies have been completed to date, a number of such studies have been conducted at the sub-national level in North America. When the interval between baseline and replication surveys was less than three years, typically no difference in prevalence was found. Of the three studies of current prevalence where the interval was greater than three years, two found increases in prevalence and one a decrease. The study that found a decrease also reported a reduction in reports of frequent participation in continuous forms of gambling (Abbott & Volberg, 1999a; 2000).

While the 1999 prevalence estimates were lower than in 1991, they are similar to those of the recent Swedish national survey that, like the 1999 New Zealand survey, also attained a high response rate (72%) and was conducted by that country's national statistical agency (Rönnberg, Volberg & Abbott et al, 1999). The 1999 New Zealand estimates are also similar to rates from the two Australian states that most resemble New Zealand in terms of per capita gambling expenditure (Productivity Commission, 1999).

While the 1999 survey findings suggest that problem gambling prevalence rates may have levelled off or declined in recent years, the authors of the 1999 survey report caution that the gambling participation and problem gambling differences between the two national surveys may be, in part or total, an artefact of sample and methodological differences (Abbott & Volberg, 2000). They also caution that information from two surveys is insufficient to determine trends over time and that the question of whether or not problem gambling prevalence rates are increasing, remaining constant, or decreasing, can only be determined definitively by a series of national surveys using similar or identical methodologies.

2. OBJECTIVES, AIMS AND METHODOLOGY OF THE STUDY

2.1 Introduction

This chapter outlines the objectives, aims and methodology used in Phase Two of the National Prevalence Survey (NPS).

Prior to the commencement of Phase One and Two of the NPS preparatory work was undertaken including a critical review of previous gambling and problem gambling surveys (Abbott & Volberg, 1999a). As indicated previously, this also involved cognitive testing of the Phase One and Two survey instruments, internal and external peer review, obtaining ethical clearance from the Auckland University of Technology Ethics Committee, conducting pilot studies and obtaining approval from the Minister of Statistics to proceed with the survey.

One important objective of the pilot studies was to assess Phase Two recruitment procedures. An aspect of the recruitment process was complicated because two agencies were involved. Although both part of the NZGS research consortium, one (Statistics New Zealand) is a crown agency and the other (National Research Bureau) is a private company. Statistics New Zealand (SNZ) was responsible for Phase One data collection. The National Research Bureau (NRB) was responsible for Phase Two data collection. SNZ is required by statute to obtain written consent from survey participants to hand over information about them, including names and telephone numbers, to a third party. Given that the Phase One interviews were conducted by telephone, this meant that obtaining written consent would require mailing and/or personal delivery of consent forms by SNZ. The research team had concerns about the logistics and cost of this and its effect on Phase Two response rates.

2.2 Major Objectives and Aims

The general aim of Phase Two of the NPS is the same as that of Phase One namely to advance scientific understanding of the nature of gambling and problem gambling in the New Zealand adult population, particularly with respect to their prevalence. Additional major and secondary aims of Phase One were listed in Chapter One.

Phase Two, reported here, involved in-depth interviews, conducted face-to-face with selected Phase One respondents. This Phase of the NPS provides additional information that has varying degrees of relevance to most of the Phase One primary and secondary aims. The more specific aims addressed in the Phase Two report include:

- Obtaining more detailed information about the gambling participation of New Zealand adults and sub-sectors of this population, namely problem gamblers, frequent (weekly or more often) gamblers and infrequent gamblers

- Describing the extent of gambling participation in adult New Zealanders' families of origin, present families, networks of friends and work settings and

comparing problem and non-problem gamblers with respect to gambling participation in these settings

- Examining adult New Zealanders' retrospective accounts of changes in gambling and problem gambling over time and identifying factors that may influence the changes reported

- Assessing the degree of correspondence between Phase One performance on the SOGS-R and two other measures of problem gambling, namely the Fisher DSM-IV Screen and interviewer DSM-III-R ratings, extending the construct validity of the SOGS-R and Fisher Screen, and considering the implications for the Phase One probable pathological and problem gambling prevalence estimates

- Assessing the hypothesis that winning a major prize or large sum of money gambling is associated with the development of problem gambling

- Determining the degree to which problem and non-problem gambling are associated with positive and negative experiences in other spheres of adult New Zealanders' lives

- Assessing relationships between problem gambling and alcohol misuse and non-psychotic mental disorder among adult New Zealanders

- Examining the extent to which adult New Zealanders have sought help for problem gambling for themselves and for other people and determining the nature of this help and its outcomes.

2.3 Questionnaire Development and Content

Questionnaire Development

The Phase Two draft questionnaire was developed by Abbott and Volberg for the present study. Most sections were the same or similar to those that comprised the 1991 Phase Two national survey instrument (Abbott & Volberg, 1992). However, some additional questions were added to the draft and others were omitted.

The Fisher DSM-IV screen for pathological gambling was included. This screen has a 12 month timeframe and thus provides a current measure of probable pathological gambling. It was developed in the United Kingdom (Fisher, 1996) and has been used in some recent North American surveys (Abbott & Volberg, 1999a) and the Swedish national survey (Rönnberg, Volberg & Abbott et al, 1999). As indicated earlier, it has not been as fully validated as the SOGS and SOGS-R or as widely used. However, this alternative problem gambling screen is based on the most recent version of the DSM, whereas the SOGS and SOGS-R were derived from the earlier DSM-III criteria for pathological gambling and validated against the subsequent DSM-III-R criteria. In the few studies to date that have used both the SOGS-R and Fisher DSM-IV Screen, moderate to high correlation has been found between performance on the two measures (Abbott & Volberg, 1999a; Abbott & McKenna, 2000; Abbott, McKenna & Giles, 2000).

It was originally planned to employ both the SOGS-R and Fisher DSM-IV Screen in the Phase One telephone interview. The decision to move the latter screen to Phase Two was based on findings from one of the Phase One pilot studies. In this pilot, a number of respondents complained that the items from the screens were repetitive and it was concluded that this could reduce Phase One questionnaire completion rates and compromise Phase Two recruitment (Abbott & Volberg, 2000).

The Beck Depression Inventory was omitted from the draft because the General Health Questionnaire (GHQ-12) was included. In the 1991 national survey, performance on these two screening instruments was highly correlated. It was concluded that they measure similar constructs and that the inclusion of one in the present study would suffice.

NRB survey specialists carefully examined the draft Phase Two questionnaire and show-cards and recorded their views on their format, content and likely ease of presentation and scoring. The draft questionnaire was then administered to 29 adults recruited from Pilot Study One (see below). The interviewers had all had considerable prior interviewing experience and had received structured, manual assisted training specific to the present survey.

In addition to presenting the questionnaire, a series of questions and prompts were used to assist interviewers in cognitively appraising the draft Phase Two instrument. A reporting framework was provided for interviewers to record interviewee responses and their own observations related to each question and section of the interview schedule. A detailed report was provided regarding ease of presentation, respondent understanding of the questions, ease of coding responses and reliability of coding and scoring. This report included recommendations to reduce ambiguity in some questions and improve interview presentation. Interviewer feedback on the training manual was also obtained and used to refine the manual for the subsequent training of Phase Two interviewers.

The research consortium director considered the NRB report and made a number of changes to the phrasing and presentation of particular questions. Some of the recommended changes were not made because they would have resulted in changes to standardised psychometric measures that had been included in the interview schedule. The content of the survey instrument used in Phase Two of the NPS is described in the next section. The instrument is provided in Appendix Three.

Questionnaire Content

The Phase Two questionnaire included questions or groups of questions about:

- Gambling activities seen advertised by respondents
- Preferred type of gambling and other forms frequently participated in, frequency of participation in these forms, time spent participating in a typical session, usual amount of money spent per session and usual person or persons gambled with
- Main reason for gambling

- Reasons given for participating in favourite form of gambling

- Whether or not gambling affects respondents' quality of life and, if it does, ways in which gambling has this effect

- Extent to which people gambled in respondents' family of origin, present family or household, network of friends and work setting

- Age first gambled and who or what introduced respondents to gambling

- Forms of gambling participated in, favourite form of gambling, other types of gambling enjoyed, frequency of gambling in favourite form, usual session length, usual session expenditure and usual gambling partners (a) when respondents first started gambling and (b) five years ago

- Respondents' assessment of whether their gambling involvement has increased or decreased compared to five years ago and reasons for increases or decreases

- Other changes in gambling activities during the past five years and whether or not these changes were linked with specific events or life stages

- Other changes in gambling activities from the time first started gambling up until five years ago and whether or not these changes were linked with specific events or life stages

- Whether or not respondents have ever won a major prize or had a big win or been close to having a big win and how these experiences affected their gambling

- Whether or not gambling advertisements, new kinds of gambling, increased ease of gambling, availability of credit cards or other factors have ever led to an increase in respondents' gambling

- Costs and benefits of gambling, ever and during the past six months, in the following life domains: personal, interpersonal/family, vocational/employment, financial, legal and gambling characteristics

- People in respondents' lives who they consider may have, or may have had, a gambling problem, whether or not they have sought help for people with gambling problems and the types of help sought

- Respondent self assessments of whether or not they have personally ever had a gambling problem and, for people who report problems:

  - The age at which problems were first noticed
  - Whether or not they have had times when they were free or mostly free of problems and, if so, how they overcame problems during these times
  - Whether or not they have returned to having gambling problems and, if so, their reasons for this
  - Whether or not they have received help for gambling problems and, if so, the source or sources of help

- Ratings of overall life satisfaction (happiness)
- Frequency of tobacco, marijuana and other illicit drug use

The Phase Two questionnaire also included the following psychometric measures:

- Fisher DSM-IV Screen
- AUDIT (a measure of hazardous alcohol use)
- General Health Questionnaire (GHQ-12) (a screening test for non-psychotic mental disorder).

Following completion of the questionnaire, interviewers rated each respondent with respect to the DSM-III-R diagnostic criteria for pathological gambling on a scale from one to four (definitely, probably, probably not, definitely not).

2.4 Pilot Studies

Pilot Study One is described in Abbott and Volberg (2000). Interviews for this field test were conducted during the last week in July, 1998. Although primarily designed to examine various components of the Phase One methodology, one purpose of this pilot was to trial aspects of the Phase Two consent process. More specifically, it was intended to assess (a) the procedure for obtaining written consent to pass on contact information for Phase Two recruitment, (b) the drop-off for verbal consents from the telephone interview to SNZ receiving written consent, and (c) the effectiveness of links between NRB and SNZ.

Forty-five pilot study respondents were randomly selected for participation in Phase Two. These people were drawn from the lifetime probable pathological gambler, regular continuous gambler, regular non-continuous gambler and infrequent gambler groups. The proportions selected were based on the relative numbers in these categories in the 1991 national survey. It was found that the number of regular continuous gamblers selected was considerably less than expected on the basis of 1991 proportions and that the number of infrequent gamblers was substantially larger. This suggested that the proportions of people in these gambling participation categories could have changed since 1991 and that the Phase Two selection ratios might need to be modified.

Thirty-three (73%) of the 45 respondents selected from the pilot study sample for Phase Two involvement verbally agreed to have their contact details passed on the NRB. Thirty of the 33 participants who agreed to have this information passed on subsequently provided written consent to this effect when a SNZ interviewer called to collect the consent form. Of the 11 lifetime probable pathological gamblers selected from the pilot study for Phase Two, nine consented to have their contact details passed on to NRB. It was thought that people in this category might more frequently decline than people who did not have gambling problems. Consequently, this result was considered to be highly satisfactory. Infrequent gamblers also had a high rate (15 out of 21). The only category where a low rate was obtained was the frequent continuous group (6 out of 10).

The 30 people who consented to have their names and contact details passed on to NRB were subsequently approached by NRB interviewers to arrange face-to-face residential interviews. Twenty-nine of the 30 agreed to be interviewed, signed consent forms to participate and were interviewed. These interviews were conducted during the

last two weeks of September 1998, approximately eight weeks after their SNZ telephone interview. The person who was not interviewed had moved house since being interviewed in July and could not be located.

From this pilot, the project director and other members of the consortium were reasonably satisfied with the procedures developed for the selection and recruitment of Phase Two participants and concluded that the response rate attained suggested that the rate for the Phase Two survey would probably be acceptable. However, the pilot Phase One response rate was 55 percent. This was considered unacceptable for the Phase One survey per se. If the Phase One response rate was only 50 to 60 percent, even if 80 percent of the people selected for Phase Two were interviewed, the overall response rate for Phase Two would range from 40 to 48 percent. This was another reason why high priority was given to developing procedures to substantially increase the Phase One response rate. Such procedures were subsequently developed and evaluated in Pilot Study Two (Abbott & Volberg, 2000).

As mentioned earlier, the Pilot Study One findings suggested that there may have been a decrease in the proportion of the adult population that reported gambling weekly or more often on continuous forms of gambling since 1991 and an increase in the proportion that reported gambling less than once a week. However the sample was very small and given that, since the 1991 survey, new forms of gambling had been introduced, gambling generally had increased in availability and per capita gambling expenditure had risen, the research director considered that such changes were unlikely. For this reason it was decided to retain the same sampling ratios for the selection of Phase Two participants.

2.5 Ethical Approval and Informed Consent

The research proposal, including a participant information sheet, consent form and draft of the Phase Two survey instrument, was submitted to and approved by the Auckland University of Technology Ethics Committee prior to the commencement of the pilot study and interviewing.

A participant information sheet was given to each potential participant by the NRB interviewer and a consent form signed prior to interviews commencing. This was in addition to verbal agreement to participate being sought from selected respondents at the conclusion of the Phase One interview and written approval being given for SNZ to pass on contact information to NRB.

2.6 Participant Recruitment

At the conclusion of Phase One telephone interviews, each selected respondent was advised that he or she had been randomly chosen to take part in a second phase of the study that involved asking further questions about gambling and the role of gambling in their lives. These respondents were further advised that NRB interviewers would conduct these interviews and that their permission was sought to pass their name and contact information on to NRB so that they could be contacted. Those people who agreed to participate were sent a written consent form seeking their permission to pass on contact details. These forms were signed prior to any respondent's information being

passed on to NRB. The interviewer who had conducted the Phase One interview collected the signed form, in most instances. In situations where this was not feasible, forms were either collected by a SNZ interviewer living closer to the respondent or were received from respondents via mail.

The names, contact telephone numbers and addresses of people who had signed consent forms were forwarded to NRB. NRB interviewers, throughout the country, then attempted to contact these people as soon as possible after receiving their allocated list of potential participants. These lists were received, on average, approximately four weeks after the Phase One interview had been conducted. Contact was initially attempted by telephone. Calls were made between 9.00 a.m. and 8.30 p.m. and callbacks were made until an appointment or a refusal to be interviewed was obtained. In those instances where telephone contact was not made, visits were made to respondents' residential addresses. A total of six visits was allowed, if necessary, with a maximum of three per week. At least one of these visits was made during a weekend.

Interviews were arranged at a venue specified by the respondents. Following an introduction, the interviewer explained the purpose of the study and, as indicated previously, handed the respondent an information sheet and sought the respondent's signed consent to participate.

2.7 Interview Procedure

As mentioned earlier, experienced NRB interviewers who had received additional training specific to the present study conducted the interviews. A training manual that had been refined following the pilot study assisted this training.

The large majority of interviews were conducted in respondents' own homes. A minority was undertaken in other settings of the respondents' choosing. In most cases this was at the respondents' place of paid employment. Interviewers read out questions from the survey instrument and displayed show-cards. The mean duration of interviews was 35 minutes. At the conclusion of the interview, out of sight of the respondent, each interviewer completed a DSM-III-R rating based on their overall impression formed from responses to questions and general observations.

2.8 Survey Population and Sample

The target and survey population for Phase One of the NPS is specified in Abbott and Volberg (2000). The Phase One sample design and achieved sample have been described earlier and further details are provided in Abbott and Volberg (2000).

Phase Two respondents were selected from the Phase One sample. All of those identified by the SOGS-R in the initial questionnaire as being lifetime probable pathological and problem gamblers were selected, as well as a proportion of non-problem gamblers. The non-problem gamblers were selected using a Poisson sampling method at the time of the Phase One interview. Poisson sampling is a method that makes use of prior knowledge about the distribution of the sample in order to achieve the desired Phase Two sample sizes in each of the gambling categories. In the present case, it was intended to re-interview as many as possible of the Phase One lifetime

probable pathological and problem gamblers and similar numbers in each of the regular continuous, regular non-continuous and infrequent gambler categories. Non-gamblers (people who reported having never gambled) were not included. As mentioned earlier, the proportion selected from each of these categories was based on their representation in the 1991 national survey. The sampling fractions used and the composition of the sample selected for Phase Two are shown in Table 3.

Table 3: Sampling Fractions and Composition of the Phase Two Sample

	Problem [1]	Continuous	Non-continuous	Infrequent	Non-gambler	Total
Sampling fraction	100%	6.9%	5.6%	4.1%	0%	
Not selected	0	537	1824	3,265	396	6,022
Selected and refused	49	11	31	36	0	127
Selected and consented	91	29	78	105	0	303
Total	140	577	1,933	3,406	396	6,452
Conversion rate 1 (consented to have contact details forwarded to NRB) = 70%						
Selected,consented and interviewed	74	25	68	89	0	256
Conversion rate 2 (response rate: consented and interviewed) = 60%						

1 Includes lifetime probable pathological and problem gamblers

Of the Phase One respondents randomly selected for Phase Two, 303 (70%) provided written consent for their contact details to be passed on to NRB (see conversion rate 1, Table 3). Some of these respondents could not be contacted by NRB interviewers or declined to be re-interviewed In Phase Two. Two hundred and fifty-six were re-interviewed; 60 percent of those initially selected (see conversion rate 2, Table 3).

Although the overall response rate is 60 percent, it is evident from inspection of Table 3 that the rates varied somewhat across the four sub-samples. Specifically, higher rates were obtained for the three non-problem groups (all 62 or 63%) than for the lifetime probable pathological and problem gamblers (53%). It is also worth noting at this juncture that, as in the pilot study, the selection ratios derived from the 1991 national survey generated considerably fewer regular continuous and more infrequent gamblers than was expected. Again, this suggests that the percentages of people in these categories within the adult population have changed appreciably since 1991.

Given that 40 percent of the selected Phase Two respondents were not interviewed, it is possible that the Phase Two sample is not representative of the Phase One 'population' from which it was drawn. The representativeness the Phase Two sample was assessed by comparing it with the Phase One 'population' on a number of sociodemographic and problem gambling measures. This was possible because, as indicated, the Phase Two sample was drawn from Phase One respondents and there was relevant information for all Phase Two respondents.

The variables examined were:

- Gender
- Age
- Ethnicity
- Employment status
- Household income

- Lifetime self-rating of having a gambling problem
- Current self-rating of having a gambling problem.

To test the statistical significance of these differences, the sampling distribution for each variable was simulated. The simulation consisted of drawing 1,000 samples, the same size as the achieved Phase Two stratum size, for each Phase Two stratum for each variable. The actual sample was then compared to the sampling distribution to assess how likely it would be for it to arise from a purely random process. If the actual sample is unlikely to arise at random, it is likely that non-random non-consent and/or non-response is affecting the sample. One thousand was chosen as the number of samples because it was a convenient base to calculate p-values from. To assess whether 1,000 was an adequate number of simulations, the process was replicated with different samples. The conclusions from the simulations were the same as the initial simulations indicating that 1,000 was an adequate number for this purpose. The full table of comparisons for each variable by strata is provided in Appendix Two.

Overall, testing at the 5 percent (1-tailed) significance level, no difference was found between the Phase Two sample and the Phase One 'population' for 38 out of the 45 observed samples. Given that with this many comparisons two 'significant' differences could be expected on a purely chance basis, this suggests that the sample may be, for the most part, representative of the 'population' it was drawn from. However, it is important to note that there were some significant differences, suggesting that, with respect to some specific variables, the observed samples had unusual values. In four out of the seven instances, it was the probable pathological and problem gambling stratum that was involved (see Table 4). Given the particular interest in this group, this is a further reason for exercising caution in the interpretation of the survey findings.

In addition to indicating those sub-samples within which there were significant differences with respect to particular variables, Table 4 also provides information on the size of the difference. For example, in the case of infrequent gamblers, there were 14 percent fewer males and 14 percent more females in the sample than in the Phase One 'population'. In the case of probable pathological and problem gamblers it can be seen that people aged 45 to 54 years, people of 'other' ethnicities and employed people were somewhat over-represented, whereas Europeans, people not in the labour force and people with incomes of $20,000 - $30,000 were somewhat under-represented.

Table 4: Instances where the Phase Two Sample was not Representative of the Population from which it was Drawn

Stratum	Variable	Value/s affected	Difference	P-value
Infrequent	Gender	Male and Female	-14% & +14%	0.005
Problem	Age	45-54 years	+6%	0.035
Regular continuous	Age	23-34 & 45-54 years	-17% & +15%	0.005
Problem	Ethnic group	European & Other	-8% & +9%	0.010
Problem	Labour force status	Employed & Not in labour force	+10% & -9%	0.006
Problem	Household income	$20,000 - $30,000	-6%	0.040
Regular non-continuous	Household income	Not elsewhere included	-5%	0.022

Given the major focus of this study on problem gambling, it should be noted that none of the sub-samples differed significantly from the 'population' on the problem gambling measures. In other words, with respect to lifetime and current self-rated problem

gambling neither the Phase Two sample as a whole nor any of the sub-samples were non-representative of the larger group from which they were selected.

The Phase Two response rate, as already indicated, was 60 percent. However, this rate was based on the number of Phase One respondents selected who were subsequently re-interviewed in Phase Two. It will be recalled that the estimated eligible response rate for Phase One was 75 percent. If the focus is shifted from consideration of the Phase Two respondents as a sample derived from the Phase One 'population' to the actual adult New Zealand population, the response rate is the product of the Phase One and Phase Two rates, namely 45 percent. This rate is similar to that of many published single-phase surveys in the gambling studies field and a little higher than that of Phase Two of the 1991 New Zealand national survey. While satisfactory in this context, 45 percent is not a high response rate and carries considerable potential for non-response bias. **As a consequence, it is necessary to exercise caution in generalising the findings of the Phase Two survey to the general adult population.**

In the tables presented in Chapter 3, a number contain some missing values. Generally, the number is small. However, in those instances where more values are missing, reliability of the information presented may be compromised.

2.9 Data Processing

Data from Phase One were entered directly into computers in SNZ's Wellington office. Details of Phase One data capture, edits and imputation, classification and definitions, coding and combined and derived variables are provided in Abbott and Volberg (2000).

Data from Phase Two questionnaires were entered into computers by NRB staff in NRB's Auckland office. Each respondent was given a unique identifier that allowed their Phase One and Phase Two data files to be merged. Data file merging was undertaken by SNZ in Wellington. Prior to forwarding Phase Two files to SNZ, all survey records were computer-edited to identify and correct invalid or inconsistent information. In cases where respondents were unwilling or unable to answer questions, 'not known' and 'refused' codes were used as appropriate.

As with Phase One, SNZ standard classifications related to age, ethnic group, marital status, income, occupation and labour force status were used. A number of open-ended questions were included in the Phase Two questionnaire. Responses to these questions were recorded verbatim and subsequently grouped into categories determined by NRB survey staff in consultation with the project director.

2.10 Weighting

Procedures used to weight the Phase One survey data were summarised earlier. Because widely varying sampling fractions were used for each of the Phase Two sub-samples (ranging from 100% for lifetime probable pathological and problem gamblers to 4% for infrequent gamblers) and non-gamblers were omitted entirely, additional weighting was required to take account of the effect of this variation.

In essence, the Phase Two weights are the Phase One final weights (incorporating post-stratification) of the Phase Two respondents, rated up to the population of New Zealanders who report having ever gambled. This is the population for Phase One minus the non-gamblers, who were not included in Phase Two.

No post-stratification was done for Phase Two because the Phase Two weights are extremely varied and post-stratifying would make them more varied. Highly varied weights mean that exchanging a high weight person with a different person can have a highly marked effect on analytical results. In other words, the more varied the weights, the less robust the analysis to the particular sample selected.

More precisely, the Phase Two weights are the Phase One final weights multiplied by the sum of the Phase One weight for the stratum divided by the Phase One weights that responded to Phase Two in the stratum, i.e.:

$$W_i^{ph2} = W_i^{ph1} \times R_h$$

where the R multiplier is the stratum constant that rates up the Phase One weights to the stratum population size estimates from Phase One.

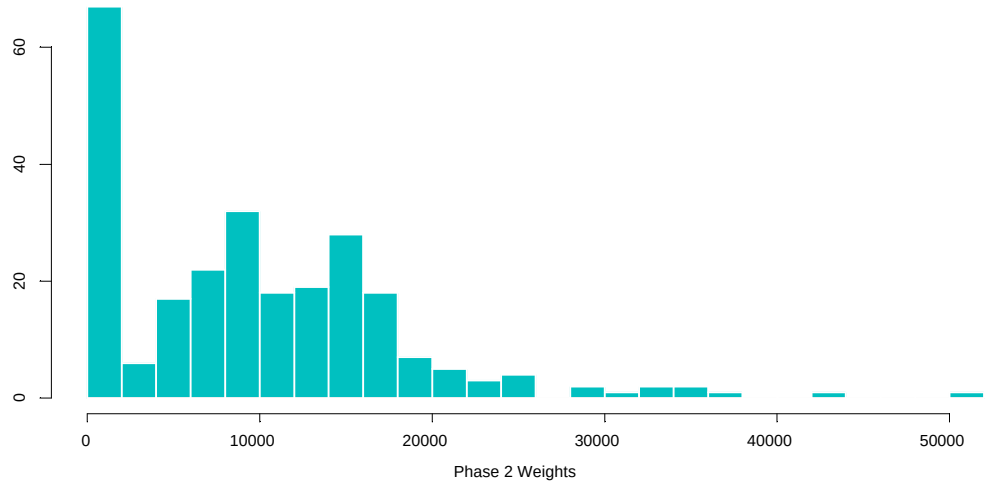
$$R_h = \sum_{i=1}^{n^{ph1}} W_i^{ph1} \Big/ \sum_{i=1}^{n^{ph2}} W_i^{ph1}$$

A simple rate up to stratum totals using the inverse probability of selection was not used because higher Phase One weighted respondents to Phase Two tended to non-respond to Phase Two and respondents from groups likely to non-respond get large post-stratification factors, and thus large Phase One weights. This meant using the inverse probability of selection to rate-up the Phase Two strata would result in rating up to stratum population sizes smaller than those estimated in Phase One.

The distribution of Phase Two weights is shown in Figure 4. The large number of units with small weights are the probable pathological and problem gamblers who were selected with certainty in Phase Two. These units have Phase Two weights equal to their Phase One weights rated up for non-response.

The application of weights to the Phase Two sample, as outlined above, means that generalisation of the survey findings to the adult population can be made with more confidence than would otherwise be the case. However, as mentioned, the low response rate and potential for non-sampling error necessitate a degree of caution.

Figure 4 : Phase Two Weight Distribution



2.11 Data Reliability

As mentioned earlier, the estimates derived from the Phase One survey are based on a sample of households and individuals within households. In the case of the Phase Two survey, the estimates are derived from a sample of Phase One respondents. Had a complete census of the population been undertaken in Phase One and all Phase One respondents been re-interviewed in Phase Two, different findings might have been obtained. Variability in survey estimates arising from the random nature of sample selection is referred to as sampling error.

Non-sampling errors are errors, other than sampling errors, that influence survey estimates. Errors of this type are multiple and can occur at almost all phases of a survey's execution and, if systematic, will result in bias to survey estimates. In both phases of the NPS, a variety of quality assurance procedures were used throughout survey development, data collection and data processing aimed at reducing non-sampling errors. Further information is provided in Abbott and Volberg (2000).

Again, as mentioned earlier, an important source of non-sampling error arises from low response rates. Low rates are the norm in general population surveys of gambling and problem gambling. Although the response rate for Phase One of the NPS appears to be higher than that of any previous general population published survey in this field, as mentioned, if the reference point is the adult population rather than Phase Two survey respondents, the Phase Two response rate is only 45 percent. While non-response to both phases of the NPS was accommodated by weighting adjustments, these adjustments cannot compensate for systematic non-sampling errors, if they are present.

In Phase One, sample errors were calculated for the various survey estimates that were reported. These sample errors took account of the sample complexity and provided an indication of the reliability of the survey estimates. Confidence intervals were also

provided that took account of sample complexity and, where appropriate, very small and very large proportions.

In Phase Two, sample errors and confidence intervals have not been calculated or reported. The main reason for not doing so is that the sample design for Phase Two is highly complex. Calculation of confidence intervals could not be done on the available software. The creation of new methodology would be required to produce good estimates of confidence intervals. The time and expense required to produce confidence intervals couldn't be justified given the potentially large non-sampling errors in the Gaming Survey Phase Two estimates.

Additionally, any confidence intervals that were calculated would rely on the randomness of the sampling for certain distributional assumptions. With the level of non-response and non-consent in Phase Two, the randomness of the sample cannot be taken for granted. Therefore, any confidence intervals calculated would be based on unjustified assumptions. Finally, there was concern that the reporting of confidence intervals for estimates from Phase Two would inspire false faith in those estimates. A common interpretation of (misconception about) confidence intervals is that the true value lies within them. In fact confidence intervals only provide a fixed level of coverage of the true value (commonly 95%) and ignore the effect of non-sampling error. Because non-sampling error is likely to have an effect on estimates from Phase Two of the Gaming Survey, the amount of coverage offered by confidence intervals to these estimates would be unclear. The interpretation that the true value lies within the confidence interval could be misleading.

2.12 Data Analysis

The analysis of data from the Phase Two survey is essentially descriptive. Most of the survey output is reported in the following chapter as proportions, e.g. statements of the kind "the proportion of current probable pathological and problem gamblers who engage in hazardous drinking." The weighting methods used provide more accurate estimates than would be the case if unweighted data were presented. However, as already noted, unlike the report on the Phase One findings, sample error estimates and confidence intervals have not been calculated for proportions and other descriptive statistics. This is because their reliability is uncertain and caution is required when apparent differences between groups are considered.

The study was designed to facilitate comparison between four groups of gamblers, namely infrequent gamblers, frequent non-continuous gamblers, frequent continuous gamblers and lifetime probable pathological and problem gamblers. However, as mentioned earlier, lower than expected prevalence rates were obtained in the Phase One survey for probable pathological and problem gamblers and frequent continuous gamblers. Somewhat higher rates were obtained for infrequent gamblers. Given the way in which the Phase Two sample was selected from Phase One, an important consequence of these lower prevalence rates was a reduction in the number of problem gamblers and frequent continuous gamblers interviewed in Phase Two.

Given the small number of frequent continuous gamblers it was decided, following consultation with SNZ statisticians, to merge the two groups of regular gamblers. This means that non-problem group comparisons are confined to two groups, the regular and

infrequent gamblers. The main interest, however, is in comparing the problem and non-problem gamblers on a variety of measures.

The spread of weights for the merged strata (the two groups of frequent gamblers) were similar. Consequently, their merging did not increase the sampling error for the combined group. Combining groups increases sample size within the new group in comparison with old ones and, consequently, often improves accuracy.

Relationships between variables of theoretical and/or practical interest are also considered in this report. Because many of the variables related to measures of particular interest are inter-related, multiple logistic regression was undertaken to take account of some of these inter-relationships and to provide an indication of the relative strength of relationships between certain variables. **However, recognising the highly complex features of the two-stage study design and noting the low response rate and potential for non-sampling errors, it was decided not to report significance levels and confidence intervals. The main reason for this decision was that their provision would have necessitated the inclusion of extensive cautionary comment and given the statistically unsophisticated reader a false sense of security with respect to the reliability of the findings.**

2.13 Cautionary Note

Data reliability is discussed earlier in this chapter. It is important to emphasise that the Phase Two results that are presented in Chapter Three and discussed in Chapter Four should be considered indicative and exploratory. The size of the Phase Two sample, and the way in which the sub-samples were drawn and the relatively low response rate mean that some of the findings, especially where small subgroups are compared, may be apparent rather than real. It would be wrong to regard reported results as statistically significant. This has not been assessed and some may well not be significant. Where findings differ from those from the more robust Phase One survey, the Phase One findings should be considered more reliable.

3. RESULTS

3.1 Introduction

The survey findings are outlined in this chapter. Although some preliminary discussion of the survey findings is included, more detailed discussion follows in Chapter Four. Prior to outlining the major findings, the Phase Two sample is described.

3.2 Sample Description

The Sociodemographic characteristics of the total Phase Two study group (sample) are provided in Table 5. The data presented in this table are unweighted**. In the large majority of subsequent tables the percentages are weighted and are not derived directly from the associated numbers of respondents (n).**

Table 5: Sample Description: Sociodemographic Characteristics

Characteristic	n	%	Characteristic	n	%
Gender			**Occupation**		
Male	120	46.9	Legislators, administrators and managers	27	10.5
Female	136	53.1	Professionals	25	9.8
			Technicians and associate professionals	15	5.9
Age Group			Clerks	23	9.0
18-24	19	7.4	Service and sales workers	27	10.5
25-34	49	19.1	Agriculture and fisheries workers	9	3.5
35-44	60	23.4	Trades workers	12	4.7
45-54	61	23.8	Plant and machine operators,assemblers	12	4.7
55-64	25	9.8	Elementary occupations	25	9.8
65+	42	16.4	Not in subject population	81	31.6
Ethnicity			**Marital Status**		
European	225	87.9	Married/living with partner	151	59.0
Māori	19	7.4	Separated/divorced/widowed	60	23.4
Pacific Island	8	3.1	Never married	45	17.6
Asian	3	1.2			
Other	1	0.4	**Religion**		
			No religion	68	26.6
Country of Birth			Anglican	60	23.4
New Zealand	212	82.8	Presbyterian	36	14.1
Europe/Australia/North America	33	12.9	Catholic	43	16.8
Other countries	11	4.3	Other Christian	42	16.4
			Other religion	6	2.3
Number of years since arrival in New Zealand			Not elsewhere included	1	0.4
Less than 4 years	2	0.8	**Household size**		
4 years or more	42	16.4	1	56	21.9
Not in subject population	212	82.8	2	83	32.4
			3	48	18.8
Highest Qualification			4	44	17.2
No formal qualification	64	25.0	5 or more	25	9.8
School qualification	53	20.7			
Vocational/trade	101	39.5	**Location**		
Degree or higher	38	14.8	Auckland	58	22.7
			Wellington	30	11.7
Labour force status			Christchurch	49	19.1
Employed	175	68.4	Rest of New Zealand	119	46.5
Unemployed	11	4.3			
Not in Labour force	70	27.3	**Household Income**		
			$20,000 or less	58	22.7

Main activity of those not			$20,001 - $30,000	44	17.2
In labour force			$30,001 - $40,000	38	14.8
Studying	3	1.2	$40,001 - $50,000	27	10.5
Retired	43	16.8	$50,001 - $70,000	34	13.3
Child minding	10	3.9	$70,000 or more	46	18.0
Other	12	4.7	Not elsewhere included	9	3.5
Not in subject population	188	73.4			

3.3 Gambling Participation and Problem Gambling

Introduction

This section considers gambling participation and related findings for the Phase Two sample as a whole. In addition, regular gamblers (people who gamble once a week or more often), infrequent gamblers (people who gamble less than once a week) and problem gamblers (SOGS-R defined lifetime probable pathological and problem gamblers) are examined separately. Consideration is also given to comparisons of some sub-samples such as men and women**. In most instances the data have been weighted to facilitate generalisation to the adult New Zealand population who report having ever gambled.**

Advertising Awareness

As part of the introduction to the interview, respondents were asked if they could recall seeing or hearing any sort of advertisements for gambling, betting or games in which there is an element of luck or chance. From participant responses to this question it is estimated that only six percent of adults who report having gambled at some time do not recall advertising for gambling activities. Eighty-two percent recall Lotto advertising. Other forms were mentioned less frequently. Next, in descending rank order, were TAB (43%), TeleBingo (29%), Daily Keno (26%) horse and dog racing (24%), casinos (21%) Instant Kiwi (20%) and other sports betting (18%). Other types of gambling advertising were mentioned by less than five percent of respondents.

Favourite Gambling Form

Ninety-three percent of adults who report having gambled at some time are estimated to have a preferred (favourite) form of gambling. This estimate was obtained from responses to the question "can you tell me what is your preferred type of gambling?" and, for those who did not nominate a preferred form, the gambling activity that respondents reported most frequently taking part in. In Phase One of the NPS, population estimates were presented based on responses to the question "which is the gambling activity that you most enjoy?" As expected, given that most frequent activities were not included for those who did not nominate a preferred activity, the population estimate for people with a 'favourite' form was lower in Phase One (74%) than in Phase Two (93%).

It is estimated that 53 percent of adults who have gambled consider Lotto to be their favourite form of gambling. Other forms of gambling preferred by adults are lotteries or raffles (9%), betting on horse and dog races (8%), Instant Kiwi (7%), non-casino gaming machines (5%), card games (3%), and housie (2%). Other forms are mentioned by less than two percent of respondents. Only one percent mentioned gaming machines in

casinos, 0.2 percent mentioned other casino games and none mentioned Internet gambling.

The favourite forms of gambling for the total study group are provided in Table 6.

Table 6: Favourite Gambling Activity by Gambling Status, Gender, Age Group and Ethnicity (Row Percentages) [1]

Variable	Favourite gaming activity						
	No Favourite	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles	0900 telephone competitions
Gambling status							
Problem	6.1% (7)	25.2% (15)	3.0% (3)	0.0% (0)	1.6% (2)	0.5% (1)	0.0% (0)
Infrequent	11.2% (12)	45.3% (37)	10.2% (8)	0.0% (0)	0.9% (1)	12.6% (13)	0.0% (0)
Regular	1.1% (2)	65.4% (58)	3.1% (3)	0.0% (0)	1.1% (2)	5.4% (6)	0.0% (0)
Sex							
Male	7.1% (12)	55.7% (52)	3.4% (2)	0.0% (0)	0.1% (1)	6.1% (5)	0.0% (0)
Female	6.7% (9)	51.0% (58)	9.7% (12)	0.0% (0)	1.7% (4)	11.5% (15)	0.0% (0)
Age group							
Less than 35 years	6.2% (3)	55.0% (27)	13.7% (8)	0.0% (0)	0.2% (2)	3.5% (2)	0.0% (0)
35 years or over	7.2% (18)	52.1% (83)	4.4% (6)	0.0% (0)	1.4% (3)	11.5% (18)	0.0% (0)
Ethnicity							
European	7.3% (20)	50.7% (97)	6.6% (13)	0.0% (0)	1.2% (5)	10.8% (20)	0.0% (0)
NZ Māori	7.0% (1)	57.8% (7)	16.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other ethnic group	0.0% (0)	78.7% (6)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	6.9% (21)	52.9% (110)	7.1% (14)	0.0% (0)	1.0% (5)	9.2% (20)	0.0% (0)

Variable	Favourite gaming activity						
	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races	Other sports betting	Dice Games for Money
Gambling status							
Problem	0.0% (0)	6.7% (4)	5.6% (2)	16.2% (14)	21.6% (17)	2.0% (1)	0.0% (0)
Infrequent	0.0% (0)	1.3% (1)	0.0% (0)	2.3% (3)	9.0% (8)	2.9% (2)	0.0% (0)
Regular	0.0% (0)	0.0% (0)	0.0% (0)	7.4% (6)	6.1% (7)	3.0% (3)	0.0% (0)
Sex							
Male	0.0% (0)	0.2% (1)	0.2% (1)	5.0% (10)	11.9% (24)	3.5% (4)	0.0% (0)
Female	0.0% (0)	1.4% (4)	0.2% (1)	4.7% (13)	5.5% (8)	2.4% (2)	0.0% (0)
Age group							
Less than 35 years	0.0% (0)	2.6% (2)	0.6% (2)	0.7% (4)	4.3% (6)	6.8% (4)	0.0% (0)
35 years or over	0.0% (0)	0.2% (3)	0.0% (0)	6.5% (19)	9.7% (26)	1.3% (2)	0.0% (0)
Ethnicity							
European	0.0% (0)	0.1% (3)	0.1% (1)	4.5% (18)	8.7% (27)	3.3% (5)	0.0% (0)
NZ Māori	0.0% (0)	9.1% (2)	0.0% (0)	7.9% (4)	1.5% (3)	0.7% (1)	0.0% (0)
Other ethnic group	0.0% (0)	0.0% (0)	1.7% (1)	5.7% (1)	10.9% (2)	0.0% (0)	0.0% (0)
Total	0.0% (0)	0.9% (5)	0.2% (2)	4.8% (23)	8.2% (32)	2.9% (6)	0.0% (0)

Variable	Favourite gaming activity				
	Card Games for Money	Housie for Money	Money Bets with friends/workmates	Other Gaming Activities	Total Population Count
Gambling status					
Problem	6.5% (5)	5.2% (3)	0.0% (0)	0.0% (0)	80,108 (74)
Infrequent	1.3% (1)	1.3% (1)	1.8% (2)	0.0% (0)	1,416,815 (89)
Regular	3.7% (3)	2.5% (2)	1.4% (1)	0.0% (0)	1,050,435 (93)
Sex					
Male	3.8% (6)	1.6% (1)	1.4% (1)	0.0% (0)	1,064,026 (120)
Female	1.5% (3)	2.1% (5)	1.7% (2)	0.0% (0)	1,483,333 (136)
Age group					
Less than 35 years	0.5% (2)	0.6% (3)	5.4% (3)	0.0% (0)	728,179 (68)
35 years or over	3.2% (7)	2.5% (3)	0.0% (0)	0.0% (0)	1,819,179 (188)
Ethnicity					
European	2.8% (8)	2.1% (5)	1.8% (3)	0.0% (0)	2,176,062 (225)
NZ Māori	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	223,350 (19)
Other ethnic group	1.3% (1)	1.7% (1)	0.0% (0)	0.0% (0)	147,946 (12)

Total	2.5% (9)	1.9% (6)	1.6% (3)	0.0% (0)	2,547,358 (256)

1. Number of respondents given in parentheses. Percentages are for weighted data and are not directly related to cell counts.

Table 6 also provides a breakdown by gambling status (regular gamblers, infrequent gamblers and problem gamblers), gender, age (less than 35 years and 35 years and over) and ethnic group (European/Pakeha, Māori and other ethnic groups). 'Total population count' is the estimated number of adults within the total population who report having ever gambled in each major category considered. For example, there are estimated to be just over 80,000 problem gamblers (lifetime probable pathological and problem gamblers) and, of these, over a fifth prefer or take part most frequently in non-casino gaming machines.

Almost all (99%) of the regular and somewhat fewer (94%) problem gamblers indicated that they have a favourite form. While more infrequent gamblers do not have a preference, most (89%) do. With respect to the sociodemographic groupings, differences between groups are not apparent in this regard. **However, it is important to note that the number of respondents in some cells (given in parentheses) is very small and, in these instances, the estimates and apparent differences between categories may be unreliable. This is particularly the case for Māori and people of other ethnicities.**

Relative to infrequent gamblers, regular (weekly or more often) gamblers more frequently have a preference for Lotto and non-casino gaming machines and less often have a preference for Instant Kiwi, other lotteries or raffles and betting on horse or dog races**. Relative to the non-problem groups, problem gamblers much more often indicate a preference for betting on horse or dog races or non-casino gaming machines**. Thirty-eight percent of problem gamblers were estimated to prefer one of these two forms. **Problem gamblers also more often favoured casino gaming machines, playing card games for money, other casino games and housie**. A further 24 percent preferred one of these forms. Relative to the non-problem groups, problem gamblers much less often had a preference for Lotto or other lotteries and raffles.

Of the forms of gambling favoured by five percent or more of the respondents, women more often have a preference for Instant Kiwi and other lotteries and raffles, whereas men prefer Lotto, betting on horse or dog races and other sports betting. **The larger the difference between groups and the larger the sample size, the more likely it is that these apparent differences are reliable. However, for reasons given previously, (p.54) standard errors and confidence intervals have not been calculated for these estimates**. The information on preferences that is presented in the Phase One report should be considered to be much more reliable than the Phase Two estimates. The main reason for outlining the Phase Two preference findings is to provide an indication of the consistency in the findings of the two phases of the NPS, even when somewhat different definitions are used.

With respect to age, the most notable differences appear to be that younger adults more often prefer Instant Kiwi and older adults more often prefer other lotteries and raffles, non-casino gaming machines and betting on horse or dog races.

Given the small number of Māori (19 people) and people of ethnicities other than Māori or European (12), it cannot be assumed that the apparent differences are reliable.

Gambling Participation

Respondents with a preferred (favourite) type of gambling were asked how often they took part in this type. They were also asked how often they took part in any additional forms of gambling that they said they frequently participated in. In contrast, in Phase One, respondents were asked to indicate which forms of gambling they had ever taken part in. Then, for each of these forms, they were asked if they had taken part in the past six months and whether they usually took part once a week or more often. Thus, the participation questions differ somewhat in the two phases of the NPS. The Phase Two data are again presented to give an indication of consistency, or otherwise, in the findings from both phases. They are also presented because additional information, that will be presented shortly, was obtained concerning those types of gambling that Phase Two respondents said they preferred or considered that they participated in frequently. This additional information was not obtained in Phase One.

Table 7 provides information on the forms of gambling that participants indicated that they prefer or frequently take part in. Participants decided for themselves what "frequent participation" meant . People without a favourite form or who did not consider that they participated frequently in some type of gambling are not included. The group is again sub-divided by gambling status, gender, age and ethnicity. These subsamples are sometimes small and the reliability of information presented is uncertain.

For the most part, the overall pattern of results is similar to that of Table 6. Lotto is mentioned most frequently, followed in descending rank order by other lotteries or raffles, Instant Kiwi, betting on horse or dog races, TeleBingo, and non-casino gaming machines. Other forms are mentioned by less than ten percent of respondents.

Relative to the non-problem groups, problem gamblers more often mentioned betting on horse or dog races, non-casino gaming machines, card games, other casino games, sports betting, housie, money bets with friends and workmates and other gaming activities. In contrast to Table 6, where only each respondent's favourite form of gambling is included, it is reiterated that Table 7 incorporates both the favourite form and any other (additional) forms respondents consider that they take part in frequently.

The regular gambling group differs from the infrequent group in that higher levels of participation in Lotto, TeleBingo, Daily Keno, casino gaming machines and non-casino gaming machines are evident. The infrequent group mentioned Instant Kiwi somewhat more often. Little or no difference was apparent for other forms.

Relative to females, males were estimated to more often have a preference for or participate frequently in Lotto. Females more often favoured or participated frequently in other lotteries and raffles and Instant Kiwi. The other small gender differences are probably not reliable.

Compared to younger people, those aged 35 years or over more often preferred or frequently engaging in TeleBingo and the purchase of other lottery or raffle tickets.

Other apparent differences between younger and older people are generally small and unlikely to be reliable.

Table 7: Favourite and other Types of Gambling Participated in Frequently by Gambling Status, Gender, Age and Ethnicity

Variable	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles	0900 telephone competitions
Gambling status						
Problem	75.9% (53)	22.5% (18)	8.0% (2)	13.5% (10)	19.7% (17)	3.0% (3)
Infrequent	64.2% (55)	32.5% (27)	0.0% (0)	7.2% (7)	39.1% (37)	0.0% (0)
Regular	91.9% (85)	26.3% (27)	5.1% (4)	21.5% (20)	38.2% (38)	2.5% (2)
Sex						
Male	83.4% (94)	23.2% (27)	3.4% (2)	14.2% (15)	24.7% (27)	1.0% (3)
Female	70.7% (99)	34.2% (45)	1.6% (4)	12.6% (22)	47.8% (65)	1.2% (2)
Age group						
Less than 35 years	73.7% (52)	31.2% (20)	0.9% (2)	8.0% (9)	25.0% (16)	2.7% (3)
35 years or over	76.9%(141)	29.0% (52)	3.0% (4)	15.4% (28)	43.4% (76)	0.5% (2)
Ethnicity						
European	77.0% (172)	29.7% (65)	1.1% (4)	12.8% (32)	39.8% (82)	1.3% (4)
NZ Māori	61.4% (12)	33.0% (5)	0.0% (0)	11.5% (2)	41.5% (7)	0.7% (1)
Other ethnic group	83.6% (9)	23.9% (2)	24.3% (2)	24.0% (3)	8.9% (3)	0.0% (0)
Total	76.0% (193)	29.6% (72)	2.4% (6)	13.3% (37)	38.1% (92)	1.1% (5)

Variable	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races	Other sports betting
Gambling Status						
Problem	0.0% (0)	16.6% (11)	9.8% (4)	26.7% (24)	38.3% (26)	8.8% (6)
Infrequent	0.6% (1)	5.0% (4)	2.3% (3)	6.7% (9)	18.7% (17)	2.9% (2)
Regular	0.0% (0)	13.2% (10)	0.0% (0)	13.7% (14)	18.6% (17)	4.8% (5)
Sex						
Male	0.0% (0)	8.4% (10)	2.5% (4)	10.1% (23)	20.5% (34)	5.3% (10)
Female	0.6% (1)	9.0% (15)	0.9% (3)	10.3% (24)	18.4% (26)	2.8% (3)
Age group						
Less than 35 years	1.2% (1)	10.6% (7)	2.4% (5)	8.9% (12)	16.8% (13)	6.9% (5)
35 years or over	0.0% (0)	8.0% (18)	1.3% (2)	10.8% (35)	20.3% (47)	2.6% (8)
Ethnicity						
European	0.4% (1)	6.5% (19)	1.6% (5)	10.7% (40)	18.2% (50)	4.4% (11)
NZ Māori	0.0% (0)	30.0% (5)	0.0% (0)	8.8% (6)	18.5% (5)	0.7% (1)
Other ethnic group	0.0% (0)	9.5% (1)	3.4% (2)	5.7% (1)	37.0% (5)	0.8% (1)
Total	0.3% (1)	8.7% (25)	1.6% (7)	10.2% (47)	19.3% (60)	3.8% (13)

Variable	Dice Games for Money	Card Games for Money	Housie for Money	Money Bets with friends/workmates	Other Gaming Activities
Gambling status					
Problem	4.9% (2)	17.8% (10)	8.9% (7)	6.9% (4)	9.4% (4)
infrequent	0.0% (0)	1.3% (1)	1.9% (2)	2.3% (3)	1.4% (1)
Regular	0.0% (0)	3.7% (3)	3.6% (3)	3.1% (3)	0.0% (0)
Sex					
Male	0.2% (1)	4.4% (10)	2.9% (3)	3.1% (6)	0.5% (3)
Female	0.1% (1)	1.7% (4)	2.8% (9)	2.6% (4)	1.5% (2)
Age Group					
Less than 35 years	0.3% (1)	1.4% (6)	0.8% (4)	6.1% (6)	3.3% (3)
35 years or over	0.1% (1)	3.4% (8)	3.6% (8)	1.4% (4)	0.2% (2)
Ethnicity					
European	0.0% (0)	2.9% (10)	3.1% (10)	3.1% (8)	0.9% (2)
NZ Māori	0.9% (1)	1.9% (2)	0.7% (1)	1.4% (2)	1.9% (2)
Other ethnic group	1.3% (1)	3.0% (2)	1.7% (1)	0.0% (0)	1.7% (1)
Total	0.2% (2)	2.8% (14)	2.8%(12)	2.8% (10)	1.1% (5)

As in Table 6, the sample sizes of the Māori and other ethnicities groups are too small to produce reliable results. However, where the differences between groups are large, they are more likely to indicate actual differences. Further investigation with larger samples is required to determine whether or not this is the case.

Table 8 provides information for those forms of gambling that were preferred or frequently engaged in, on:

- frequency of participation
- usual session length
- usual expenditure per gambling session.

Table 8: Frequency of Participation, Usual Session Length, and Usual Expenditure per Session for Major Types of Gambling

Variable	Lotto	Instant Kiwi	Daily Keno	Tele Bingo	Other Lotteries/ raffles	Casino gaming machines	Other casino games
Frequency of participation							
Everyday	1.6% (3)	2.7% (2)	30.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Several times per week	0.3% (1)	0.1% (1)	0.0% (0)	0.0% (0)	0.1% (1)	0.0% (0)	0.0% (0)
Once per week	44.2% (104)	9.5% (13)	50.5% (1)	53.4% (23)	9.9% (13)	0.6% (2)	0.0% (0)
Once per fortnight	15.8% (26)	3.7% (7)	0.0% (0)	11.4% (3)	5.5% (4)	0.7% (1)	6.3% (1)
Once per month	15.0% (19)	23.8% (15)	11.8% (1)	3.4% (2)	26.0% (22)	0.9% (1)	13.2% (3)
Less than once per month	22.4% (39)	57.4% (32)	7.6% (1)	31.7% (9)	58.0% (51)	91.2% (20)	43.9% (2)
Don't know	0.8% (1)	2.7% (2)	0.0% (0)	0.0% (0)	0.5% (1)	6.7% (1)	36.7% (1)
Usual session length (minutes)							
Mean	16 (192)	5 (69)	25 (6)	29 (37)	5 (90)	112 (24)	190 (5)
Standard deviation	24.6	4.1	40.5	9.1	8.3	130.0	70.6
Usual spend per session ($)							
Mean	7.31 (192)	3.62 (7	7.40 (6)	4.77 (37)	3.65 (90)	48.93 (23)	102.88 (6)
Standard deviation	5.4	2.5	4.6	1.6	4.4	38.9	82.1

Variable	Non-casino gaming machines	Betting on horse or dog races	Other sports betting	Card Games for Money	Housie for Money	Money Bets with friends/ workmates
Frequency of participation						
Everyday	0.1% (1)	0.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Several times per week	9.3% (7)	1.1% (5)	0.0% (0)	0.4% (1)	16.4% (2)	2.2 % (1)
Once per week	19.6% (10)	4.2% (10)	43.4% (4)	0.0% (0)	12.3% (2)	51.7% (4)
Once per fortnight	9.5% (5)	7.3% (4)	1.7% (2)	35.1% (4)	1.2% (1)	3.4% (2)
Once per month	15.4% (11)	24.6% (12)	54.9% (7)	6.2% (2)	0.0% (0)	0.0% (0)
Less than once per month	46.1% (13)	62.5% (27)	0.0% (0)	58.3% (7)	70.1% (7)	42.8% (3)
Don't know	0.0% (0)	0.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Mean Usual session length (minutes)						
Mean	51 (47)	182 (58)	79 (13)	152 (14)	152 (12)	86 (10)
Standard deviation	44.9	164.2	79.4	98.8	51.1	99.4
Usual spend per session ($)						
Mean	29.5 (46)	23.6 (57)	10.9 (13)	16.5 (13)	13.1 (12)	3.00 (10)
Standard deviation	48.2	50.1	11.3	26.1	7.6	2.9

Some forms of gambling were not included in the Table because very few or no participants reported taking part in them. As with Table 7 participants who did not report having a favourite form or participating frequently in some other form are excluded.

In Phase One, respondents who indicated that they had taken part during the past six months in particular forms of gambling were asked how much they typically spent each month on each activity. They were not asked about expenditure per gambling session, or usual session length. Phase Two differed from Phase One in that more detailed information was sought about frequency of participation.

With respect to frequency of participation, the types of gambling most often engaged in weekly or more often by people who prefer or participate frequently in each form of gambling are Daily Keno (81%), taking money bets with friends or workmates (54%), TeleBingo (53%), Lotto (46%), other sports betting (43%), housie (29%), non-casino gaming machines (29%), Instant Kiwi (12%) and other lotteries or raffles (10%). Other forms, including betting on horse and dog races and casino gambling (both machines and other games), are rarely participated in on a weekly or more frequent basis. In a number of cases, for example Daily Keno and taking money bets with friends and workmates, while relatively small percentages of people favour or take part in them frequently, a high proportion of those who do, participate very often. In the case of Daily Keno, 30 percent are estimated to participate on a daily basis.

From Table 8 it can be seen that usual session lengths evidence considerable variation across the different types of gambling. Other casino games, betting on horse and dog races, playing card games for money, playing housie, and casino gaming machines all have average session lengths of 100 minutes or more. The standard deviations are also large for these forms of gambling, indicating wide variation in reported session lengths. The types of gambling with the longest average session lengths are predominantly those that are engaged in on a regular basis by relatively small proportions of the adult population.

As with frequency of participation and session length, variability across gambling forms is also evident with respect to average reported expenditure per gambling session. For almost half of the forms listed, mean reported expenditure is modest - less than NZ$10 per session. However, much higher estimates are obtained for other casino games (NZ$103) and casino gaming machines (NZ$49). Forms in the mid-range include non-casino gaming machines (NZ$29), betting on horse and dog races (NZ$24) and card games (NZ$17). Interestingly, both average session length and reported expenditure per session for casino gaming machines are roughly double those for non-casino gaming machines.

Table 9 provides information on the person or persons usually gambled with during participation in each type of favoured gambling activity. Forms engaged in by less than 20 respondents have not been included.

Table 9: Usual Person or Persons Gambled with during each Major Type of Gambling

Variable	Lotto	Instant Kiwi	TeleBingo	Other lotteries /raffles	Casino gaming machines	Non-casino gaming machines	Betting on horse or dog races
Partner/spouse	43.1% (89)	25.4% (20)	37.9% (16)	12.3% (14)	46.5% (14)	32.0% (9)	27.2% (18)
Other family	9.6% (22)	9.3% (9)	19.5% (5)	8.5% (8)	10.8% (3)	2.0% (4)	17.7% (15)
Friends	3.9% (7)	3.6% (3)	0.0% (0)	10.0% (11)	18.3% (8)	20.2% (19)	18.9% (14)
Acquaintances	0.4% (1)	0.0% (0)	0.0% (0)	5.4% (4)	0.0% (0)	4.4% (2)	2.8% (2)
Strangers	1.2% (1)	0.0% (0)	0.0% (0)	0.9% (2)	0.0% (0)	0.0% (0)	0.5% (2)
Work mates	5.4% (11)	0.0% (0)	0.0% (0)	6.4% (12)	1.6% (1)	0.2% (1)	7.1% (4)
No one	34.9% (77)	57.7% (41)	42.6% (17)	48.6% (51)	11.8% (2)	41.6% (19)	25.6% (24)
Other	0.0% (0)	0.0% (0)	0.0% (0)	4.6% (4)	0.0% (0)	0.0% (0)	0.0% (0)
Don't know	1.4% (1)	4.1% (2)	0.0% (0)	3.3% (1)	11.0% (1)	0.0% (0)	0.1% (1)

For most forms of gambling reported in Table 9, spouses or partners are mentioned most often as the person usually gambled with. In the case of Lotto, it is estimated that

43 percent of people who favour or frequently participate in this activity usually do so with their partner or spouse. Other family members are quite often mentioned in relation to TeleBingo and betting on horse or dog races. Friends are also mentioned quite often with respect to betting on horse or dog races, casino gaming machines and non-casino gaming machines. Workmates and other people are infrequently mentioned in relation to any activity.

While spouses and partners are often mentioned, most forms are also frequently engaged in alone. This is especially the case with Instant Kiwi, other lotteries and raffles, TeleBingo, and non-casino gaming machines. Casino gaming machines are least likely to be mentioned in this regard, followed by betting on horse or dog races.

Reasons for Gambling

Participants were asked, as were their counterparts in the second phase of the 1991 National Survey (Abbott & Volberg, 1992; 1996), the main reason why they gambled. This was an open-ended question asked of all respondents. Responses were subsequently categorised into meaningful groupings. Information relating to this question is provided in Table 10. In addition to providing information for the study group as a whole, information is provided by gambling status, gender, age and ethnicity.

Table 10: Main Reasons for Gambling by Gambling Status, Gender, Age and Ethnicity

Variable	Socialising	Excitement	Interested	To win money/ prizes	To support worthy causes	Novelty
Gambling status						
Problem	7.3% (8)	12.0% (17)	3.0% (6)	41.3% (48)	1.9% (4)	0.0% (0)
Infrequent	6.3% (10)	9.1% (12)	2.5% (4)	39.4% (48)	14.3% (20)	0.8% (2)
Regular	5.5% (8)	6.0% (8)	4.4% (9)	49.3% (70)	5.5% (8)	3.8% (2)
Sex						
Male	5.4% (10)	4.7% (15)	5.2% (12)	51.0% (78)	4.0% (7)	1.7% (1)
Female	6.4% (16)	9.8% (22)	2.2% (7)	39.2% (88)	13.9% (25)	2.3% (3)
Age group						
Less than 35 years	6.9% (11)	11.6% (12)	1.2% (1)	45.7% (48)	5.8% (5)	2.9% (2)
35 years or over	5.6% (15)	6.3% (25)	4.2% (18)	42.7% (118)	12.1% (27)	1.7% (2)
Ethnicity						
European	7.2% (24)	6.9% (31)	3.6% (17)	44.1% (144)	10.5% (28)	0.5% (2)
NZ Māori	0.2% (1)	10.7% (5)	0.2% (1)	36.7% (14)	14.0% (4)	15.0% (2)
Other ethnic group	1.0% (1)	16.1% (1)	5.2% (1)	48.2% (8)	0.0% (0)	0.0% (0)
Total	6.0% (26)	7.9% (37)	3.3% (19)	43.6% (166)	10.2% (32)	2.0% (4)

Variable	Entertainment	Have always done it	Impulse	Addiction/ compulsion	Other
Gambling status					
Problem	31.0% (35)	1.7% (3)	0.0% (0)	1.0% (2)	0.8% (1)
Infrequent	20.5% (26)	0.8% (1)	4.6% (6)	0.0% (0)	1.5% (2)
Regular	24.0% (39)	1.1% (2)	0.0% (0)	0.0% (0)	0.4% (1)
Sex					
Male	22.6% (45)	1.4% (4)	2.9% (3)	0.1% (1)	1.1% (1)
Female	22.2% (55)	0.7% (2)	2.3% (3)	0.0% (1)	1.0% (3)
Age group					
Less than 35 years	21.8% (27)	0.0% (0)	3.9% (3)	0.0% (0)	0.1% (1)
35 years or over	22.6% (73)	1.4% (6)	1.9% (3)	0.1% (2)	1.4% (3)
Ethnicity					
European	22.2% (85)	1.1% (5)	2.5% (5)	0.0% (2)	1.2% (4)
NZ Māori	18.8% (6)	0.2% (1)	4.3% (1)	0.0% (0)	0.0% (0)
Other ethnic group	29.5% (9)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	22.4% (100)	1.0% (6)	2.5% (6)	0.0% (2)	1.0% (4)

Table 16a in the NPS Phase One report, in contrast to Table 10, includes all reasons for gambling. In Phase One, respondents were not asked to provide their main reason for gambling participation.

The main reasons most often given for gambling are to win money or prizes (44%) and for entertainment (22%). These reasons held their top ranking across the gambling status and sociodemographic groups considered in Table 10. Other reasons are mentioned less often, each by ten percent or less of the respondents.

Infrequent gamblers more often than regular gamblers gambled to support worthy causes and gambling on impulse. Other differences between regular and infrequent gamblers were minor and unlikely to be significant given the small sample sizes involved**. Problem gamblers more often than people in the non-problem groups gambled for entertainment or excitement. They less often mentioned that they gambled to support worthy causes and, relative to regular gamblers, less often gambled to win money or prizes.**

Males more frequently gambled to win money or prizes. Women differed from men in that they more frequently gave supporting worthy causes or excitement as reasons. Younger adults reported gambling for excitement more often than older adults who more often gambled to support worthy causes. Māori less often gambled to win money or prizes than Europeans and members of other ethnic groups did. People in this latter grouping mentioned gambling to win money or prizes and gambling for excitement more often than was the case for Māori and Europeans. Other apparent ethnic differences, given that they are based on very small samples, are unlikely to be reliable.

Table 11: Main Reasons Given for Taking Part in Favourite Gambling Activities

Variable	Lotto	Instant Kiwi	Other lotteries/raffles	Non-casino gaming machines	Betting on horse or dog races
Socialising	0.5% (1)	0.0% (0)	0.0% (0)	7.4% (1)	15.6% (7)
Excitement	5.9% (13)	8.8% (3)	5.9% (1)	1.0% (3)	4.4% (9)
Interested	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	23.3% (13)
Win Prizes/money	26.5% (54)	3.2% (2)	9.8% (4)	25.5% (10)	3.8% (5)
Support worthy cause	2.2% (6)	0.0% (0)	60.3% (15)	5.3% (1)	0.0% (0)
Entertainment	7.4% (20)	14.4% (6)	0.0% (0)	22.0% (10)	27.6% (15)
Grew up with it	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	5.7% (4)
Convenient	13.0% (22)	9.1% (4)	5.1% (1)	5.8% (4)	0.1% (1)
Easy to play	14.7% (27)	9.1% (3)	14.0% (4)	5.6% (6)	0.0% (0)
Quick to play	6.8% (18)	10.5% (4)	0.0% (0)	0.6% (4)	1.8% (1)
Cheap to play	3.9% (5)	20.9% (5)	4.9% (1)	0.5% (1)	0.5% (1)
Big prizes	9.0% (18)	0.0% (0)	0.0% (0)	3.2% (2)	0.0% (0)
High chance of winning	1.1% (3)	5.6% (1)	0.0% (0)	1.7% (4)	3.6% (2)
Requires skill	0.0% (0)	0.0% (0)	0.0% (0)	5.8% (2)	0.2% (1)
Less risk/more control	3.1% (6)	0.0% (0)	0.0% (0)	3.5% (4)	0.5% (1)
Wins in the past	1.3% (3)	0.0% (0)	0.0% (0)	7.4% (1)	3.9% (2)
Routine	2.8% (8)	2.9% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Lasts a long time	0.0% (0)	0.0% (0)	0.0% (0)	0.5% (1)	2.5% (4)
Fair game	0.2% (2)	0.0% (0)	0.0% (0)	0.0% (0)	1.8% (1)
Takes all my attention	0.0% (0)	0.0% (0)	0.0% (0)	1.0% (3)	0.0% (0)
Other	1.5% (5)	2.9% (1)	0.0% (0)	3.1% (1)	4.9% (4)
Don't know	0.0% (0)	12.6% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Number of responses	211	31	26	58	71
Number of respondents	110	14	20	23	32

Because gambling activities are heterogeneous and reasons for participation are likely to vary considerably across different forms of gambling, participants were also asked the main reason why they took part, specifically, in their favourite or most frequently engaged in form of gambling. This enabled reasons for gambling to be considered separately for each major form of gambling. Table 11 lists reasons given for a variety of gambling activities.

Effects on Quality of Life

Participants were asked if they thought that gambling affects the quality of their lives. The great majority of people did not consider that gambling affected their quality of life. From participant responses it is estimated that only four percent of adults who report having gambled at some time consider that gambling affects their quality of life. Those reporting that gambling affected their lives were then asked how they considered that gambling had this effect. This was an open-ended question that involved subsequent response classification. The main explanations or reasons are given in Table 12.

Table 12: Ways in which Gambling Affects Quality of Life

Financially – less money	0.7% (8)
Regret – could have used money better	0.2% (7)
Feel depressed	0.1% (4)
Cause arguments	0.1% (3)
Overspend	0.2% (5)
Socially beneficial	0.6% (4)
Provides enjoyment	1.4% (7)
Adds to finances	0.0% (4)
Other	1.0% (8)
Number of responses	50
Number of respondents	28

Gambling Participation in Family of Origin, Present Family or Household, Circle of Friends and Work Setting

Table 13 provides information for the total study group and gambling status, gender, age and ethnic groups concerning reported gambling participation in four different past or current social contexts.

From Table 13 it can be seen that over a quarter of people (29%) who ever gambled are estimated to have grown up in a family that did not gamble at all. Over half (53%) indicated that there was a little gambling in their family of origin, 12 percent a moderate amount and six percent a lot. In contrast, with respect to their current family, only 13 percent were estimated to not gamble at all, suggesting an increase over time in gambling involvement. However, while more people indicated that their current family gambled, the great majority (75%) did so only a little and somewhat less did so a moderate amount (9%) or a lot (1%). **This suggests that more families may gamble than did so in the past, but that there has been a reduction in the proportion that gamble frequently.**

The possibility that more families gamble currently than in the past is consistent with the further finding that more adults aged 35 years and over were estimated to have experienced no gambling in their family of origin than adults aged under 35 years (31%

and 24% respectively). People aged less than 35 years reported considerably higher frequencies of moderate to heavy gambling in their families of origin. However, this age difference was not evident with respect to respondents' current families. Specifically, 30 percent of younger adults (compared to 12% of older adults) were estimated to have experienced a moderate amount or a lot of gambling in the families they grew up in. In their current families, only nine percent of younger adults (compared with 11% of older adults) experienced a moderate amount or a lot of gambling. **These findings suggest that while younger adults grew up in families that gambled more than they had in the past, this increase did not flow through into the families that they, themselves, subsequently established.**

Table 13 suggests that substantially more problem gamblers (41%) than non-problem regular (16%) and infrequent (17%) gamblers grew up in families that gambled a moderate amount or a lot. Problem gamblers also had higher levels of gambling in their current family and among their friends.

Women somewhat more often than men had higher levels of gambling in their families of origin and more often indicated that there was no gambling in their current family. They were also estimated to have lower levels of gambling participation among their friends and work-mates.

With regard to friends' gambling involvement, younger adults more often indicated that they did not gamble at all or gambled a lot. A similar pattern of results was evident for work-mates, with more younger adults estimated both to not gamble and to have moderate to high involvement.

Table 13: Gambling In Family in Origin, Present Living Situation, Network of Friends and Work Setting by Gambling Status, Gender, Age and Ethnicity

	How much did the family you grew up with gamble?				
Variable	**Not at all**	**A little**	**Moderate amount**	**A lot**	**Don't Know/NA**
Gambling status					
Problem	23.9% (16)	31.0% (29)	33.1% (19)	7.9% (8)	4.2% (2)
Infrequent	30.4% (30)	52.8% (47)	11.5% (8)	5.4% (4)	0.0% (0)
Regular	28.0% (24)	55.9% (58)	10.6% (8)	5.5% (3)	0.0% (0)
Sex					
Male	27.5% (31)	58.9% (63)	9.6% (19)	3.7% (5)	0.3% (2)
Female	30.4% (39)	49.4% (71)	13.4% (16)	6.8% (10)	0.0% (0)
Age group					
Less than 35 years	24.0% (18)	46.4% (29)	21.7% (15)	8.0% (6)	0.0% (0)
35 years or over	31.3% (52)	56.2% (105)	7.9% (20)	4.5% (9)	0.2% (2)
Ethnicity					
European	27.8% (60)	60.2% (129)	9.1% (26)	2.9% (10)	0.0% (0)
NZ Māori	20.2% (5)	21.8% (4)	23.8% (5)	34.3% (5)	0.0% (0)
Other ethnic group	62.8% (5)	1.3% (1)	33.6% (4)	0.0% (0)	2.3% (2)
Total	29.2% (70)	53.4% (134)	11.8% (35)	5.5% (15)	0.1% (2)

	How much does your current family gamble?				
Variable	**Not at all**	**A little**	**Moderate amount**	**A lot**	**Don't Know/NA**
Gambling status					
Problem	12.2% (10)	50.7% (39)	20.4% (13)	11.7% (5)	5.0% (7)
Infrequent	14.8% (16)	75.0% (61)	6.7% (6)	1.6% (2)	2.0% (4)
Regular	9.8% (11)	76.6% (69)	10.9% (8)	0.0% (0)	2.7% (5)
Sex					
Male	5.3% (13)	82.4% (82)	7.9% (12)	0.8% (4)	3.6% (9)

Female	17.9% (24)	69.5% (87)	9.5% (15)	1.6% (3)	1.5% (7)
Age group					
Less than 35 years	14.8% (11)	76.7% (46)	7.4% (8)	1.1% (3)	0.0% (0)
35 years or over	11.8% (26)	74.2% (123)	9.4% (19)	1.4% (4)	3.3% (16)
Ethnicity					
European	14.3% (36)	74.8% (148)	7.0% (21)	1.2% (5)	2.7% (15)
NZ Māori	4.6% (1)	68.4% (12)	26.5% (5)	0.5% (1)	0.0% (0)
Other ethnic group	0.0% (0)	85.9% (9)	9.5% (1)	3.8% (1)	0.8% (1)
Total	12.6% (37)	74.9% (169)	8.8% (27)	1.3% (7)	2.4% (16)

	How much do your friends gamble?				
Variable	**Not at all**	**A little**	**Moderate amount**	**A lot**	**Don't Know/NA**
Gambling status					
Problem	6.2% (5)	47.3% (39)	20.1% (17)	18.7% (9)	7.8% (4)
Infrequent	10.2% (9)	54.4% (52)	16.3% (15)	8.6% (5)	10.6% (8)
Regular	3.8% (3)	63.2% (64)	17.3% (14)	2.8% (3)	12.9% (9)
Sex					
Male	5.3% (6)	49.9% (68)	18.6% (23)	10.3% (10)	16.0% (13)
Female	9.0% (11)	63.4% (87)	15.5% (23)	3.8% (7)	8.2% (8)
Age group					
Less than 35 years	12.4% (7)	51.6% (40)	13.3% (11)	13.9% (7)	8.8% (3)
35 years or over	5.4% (10)	60.3% (115)	18.2% (35)	3.5% (10)	12.5% (18)
Ethnicity					
European	7.0% (15)	61.1% (145)	15.4% (39)	6.4% (9)	10.0% (17)
NZ Māori	16.7% (2)	22.1% (6)	36.9% (5)	7.5% (5)	16.7% (1)
Other ethnic group	0.0 (0)	62.6% (4)	6.9% (2)	6.3% (3)	24.1% (3)
Total	7.4% (17)	57.8% (155)	16.8% (46)	6.5% (17)	11.4% (21)

	How much do your work mates gamble?				
Variable	**Not at all**	**A little**	**Moderate amount**	**A lot**	**Don't Know/NA**
Gambling status					
Problem	17.6% (12)	41.8% (30)	8.1% (9)	14.7% (5)	17.8% (18)
Infrequent	13.5% (10)	27.7% (26)	15.2% (12)	1.3% (1)	42.4% (40)
Regular	2.0% (2)	49.3% (46)	15.2% (11)	1.3% (1)	32.2% (33)
Sex					
Male	8.0% (14)	32.6% (48)	20.9% (18)	2.1% (4)	36.4% (36)
Female	9.5% (10)	40.2% (54)	10.7% (14)	1.4% (3)	38.1% (55)
Age group					
Less than 35 years	16.8% (11)	26.6% (25)	23.9% (10)	5.8% (6)	26.9% (16)
35 years or over	5.7% (13)	41.2% (77)	11.4% (22)	0.0% (1)	41.6% (75)
Ethnicity					
European	8.5% (20)	40.2% (93)	13.6% (27)	0.0% (1)	37.7% (84)
NZ Māori	17.4% (3)	12.5% (5)	38.3% (5)	14.9% (3)	16.8% (3)
Other ethnic group	2.1% (1)	26.9% (4)	0.0% (0)	6.3% (3)	64.7% (4)
Total	8.9% (24)	37.0% (102)	15.0% (32)	1.7% (7)	37.4% (91)

There appear to be substantial ethnic differences with respect to gambling in different times and contexts. However, as mentioned previously, apart from the European category, the Māori and other ethnic group samples are small and it cannot be assumed that the estimates for them are reliable.

Initiation of Gambling Involvement

The average age at which participants first reported having commenced gambling was 19.8 years (10.6 standard deviation). Fourteen percent were estimated to have first gambled before the age of ten years, 14 percent from ten to 14 years, 37 percent from 15 to 19 years, 21 percent from 20 to 29 years and 13 percent 29 years and older. These findings indicate quite wide variability in the age at which people first gambled.

Age at which gambling was first reported is provided by gambling status, gender, age and ethnicity in Table 14.

With respect to gambling status, it was estimated that both problem and infrequent gamblers more often than regular gamblers first gambled before the age of ten years. Problem gamblers less often started gambling after the age of 30 years. Problem gamblers, relative to those in the two non-problem groups, also less often started gambling between the ages of 15 to 19 years. The small differences between other age groups are unlikely to be reliable.

Although substantially more males and females were estimated to have first gambled between the ages of 15 to 19 years than at other ages, relatively more males (44%) than females (32%) commencing gambling during this mid to late teens period. More females (18%) than males (7%) were estimated to have first gambled at the age of 30 years or older.

Table 14: Age First Gambled by Gambling Status, Gender, Age and Ethnicity

	Age first gambled				
Variable	**Younger than 10**	**10-14**	**15-19**	**20-29**	**30 or older**
Gambling status					
Problem	17.1% (12)	18.9% (18)	27.4% (24)	28.8% (14)	7.8% (6)
Infrequent	18.8% (19)	13.4% (11)	38.4% (32)	18.2% (15)	11.3% (12)
Regular	8.3% (9)	15.5% (13)	36.7% (37)	23.6% (21)	15.9% (13)
Sex					
Male	12.5% (15)	14.0% (23)	44.2% (52)	22.5% (20)	6.8% (10)
Female	15.8% (25)	14.7% (19)	32.4% (41)	19.5% (30)	17.6% (21)
Age group					
Less than 35 years	18.7% (16)	15.2% (12)	37.2% (21)	22.9% (16)	6.0% (3)
35 years or over	12.7% (24)	14.1% (30)	37.4% (72)	19.9% (34)	15.9% (28)
Ethnicity					
European	13.8% (35)	13.1% (37)	43.4% (89)	18.8% (40)	10.8% (24)
NZ Māori	29.3% (4)	22.0% (4)	2.7% (4)	6.9% (2)	39.1% (5)
Other ethnic group	1.3% (1)	22.4% (1)	0.0% (0)	69.8% (8)	6.5% (2)
Total	14.4% (40)	14.4% (42)	37.3% (93)	20.7% (50)	13.1% (31)

Māori were much more likely than members of the other two ethnic categories to first gamble before the age of ten years (29%) and after the age of 29 years (39%). Only a small proportion (10%) were estimated to have started gambling between the ages of 15 to 29 years. Europeans, on the other hand, were most likely to have started gambling at this time (62%). People in the residual other ethnic group category most often first gambled between the ages of 20 to 29 years (70%) and rarely did so before the age of ten years (1%). None in this category commenced gambling between the ages of 15 to 19 years. While the sample sizes are small for Māori and people of other ethnicities, the magnitude of some of these differences is such that they warrant further investigation.

Age when participants reported first gambling is also examined in relation to current favourite gambling activity (see Table 15).

From Table 15 it is apparent that the majority of people who currently preferred Lotto were estimated to have first gambled between the ages of 15 to 19 years (41%) or 20 to 29 years (29%). In comparison with the other preferred forms listed in Table 15, very few started gambling before the age of ten. Although people who currently preferred

other lotteries or raffles also quite often first started gambling between the ages of 15 to 19 years (31%), somewhat more (34%) first gambled before the age of ten years. Proportionately more people with this preference first gambled at this young age than did people with other current preferences.

Table 15: Age First Gambled by Favourite Current Gambling Activity

Gambling Preference	Age first gambled				
	Younger than 10	10-14	15-19	20-29	30 or older
Lotto	5.6% (9)	12.5% (15)	41.0% (45)	29.2% (30)	11.7% (11)
Other lotteries/raffles	33.7% (7)	14.1% (3)	30.9% (6)	4.8% (1)	16.5% (3)
Gaming machines outside casinos	20.6% (3)	15.0% (4)	9.8% (3)	26.6% (5)	28.1% (8)
Betting on horse and dog races	19.0% (3)	40.5% (12)	22.4% (10)	10.7% (5)	7.4% (2)
Other gambling activities	22.7% (13)	11.4% (4)	42.7% (21)	14.8% (8)	8.4% (4)
No preferred gambling activity	24.8% (5)	6.6% (4)	41.0% (8)	0.5% (1)	27.1% (3)
Total	14.4% (40)	14.4% (42)	37.3% (93)	20.7% (50)	13.1% (31)

Over half (55%) of the people who preferred non-casino gaming machines were estimated to have first gambled at the age of 20 years or older. However, over a third (36%) commenced gambling before the age of 15 years. In contrast, relatively few people who preferred betting on horse and dog races (18%) began gambling after the age of 19 years and the majority (60%) first gambled before the age of 15 years. Given that preferences for these two forms of gambling have a strong association with problem gambling in New Zealand, these differences are of potential interest. However, for older people it needs to be noted that gaming machines only became available in the early 1980s.

People who preferred forms of gambling that are not listed separately in Table 15 and people with no favourite form, were estimated to most often (43% and 41% respectively) have first gambled between the ages of 15 to 19 years. Relatively large numbers in both groups also first gambled before the age of 15 years and relatively large numbers of the latter group first gambled at the age of 30 years or older.

In addition to the age at which they first started gambling, participants were asked "who, if anyone, or what if anything, introduced you to gambling?" If they did not respond or said something like "nobody," "nothing," "myself", they were asked about the circumstances of their first gambling involvement. Responses were subsequently categorised and are summarised in Table 16. In this table, a breakdown by age when they first started gambling, gambling status, gender, age and ethnicity is also provided.

For the study group as a whole, it was estimated that people most often had been introduced to gambling by their family (22%). Next most often mentioned in this regard were raffles (17%), friends (16%), advertising (9%), workmates (8%) direct exposure (7%) and desire to win (6%).

Relative to non-problem gamblers, problem gamblers much more often indicated that they had been introduced to gambling by their family. Similar percentages of regular and infrequent gamblers were introduced to gambling by their families. Problem gamblers also somewhat more often considered that they had been introduced to gambling by direct exposure to it. Relative to problem and infrequent gamblers, regular gamblers more often had been introduced to gambling by their friends and workmates. Friends

were mentioned as often as their family. Infrequent gamblers more often mentioned raffles than problem or frequent gamblers did.

Similar percentages of males and females mentioned their family in relation to their introduction to gambling. However, somewhat more males referred to friends than to their families and, in this respect, they differed considerably from females.

Females mentioned raffles and direct exposure more frequently than was the case for males. People aged 35 years or older also somewhat more often referred to friends and raffles. This group also more often than younger adults mentioned workmates. People who were younger than 35 years much more often mentioned advertising.

Table 16: How Introduced to Gambling for the Total Study Group by Age First Started Gambling, Gambling Status, Gender, Age and Ethnicity

Variable	Family	Friends	Partner	Raffles	Workmates
Gambling status					
Problem	39.3% (36)	16.6% (14)	4.2% (3)	5.4% (6)	4.3% (5)
Infrequent	20.6% (24)	12.2% (14)	2.7% (3)	23.9% (27)	5.5% (7)
Regular	22.0% (23)	22.2% (21)	2.0% (3)	7.3% (9)	10.9% (13)
Sex					
Male	20.8% (38)	25.2% (31)	0.0% (0)	12.8% (15)	8.5% (12)
Female	22.3% (45)	10.0% (18)	4.1% (9)	19.8% (27)	6.9% (13)
Age group					
Less than 35 years	24.5% (26)	13.7% (11)	0.4% (2)	10.8% (8)	2.8% (3)
35 years or over	20.5% (57)	17.2% (38)	3.3% (7)	19.5% (34)	9.5% (22)
Ethnicity					
European	22.3% (73)	15.8% (41)	2.8% (8)	16.5% (38)	8.3% (24)
NZ Māori	29.6% (8)	20.5% (6)	0.0% (0)	21.3% (3)	0.0% (0)
Other ethnic group	2.3% (2)	16.5% (2)	1.3% (1)	17.4% (1)	7.3% (1)
Age first gambled					
Younger than 10	18.1% (18)	10.8% (4)	0.0% (0)	47.8% (14)	0.0% (0)
10-14	42.1% (23)	9.6% (6)	0.0% (0)	20.6% (11)	0.0% (0)
15-19	27.1% (32)	20.1% (23)	2.7% (3)	13.3% (12)	10.0% (13)
20-29	6.0% (6)	21.6% (9)	6.9% (5)	5.9% (3)	9.8% (7)
30 or older	15.5% (4)	10.8% (7)	0.1% (1)	6.6% (2)	13.3% (5)
Total	21.7% (83)	16.2% (49)	2.4% (9)	16.9% (42)	7.5% (25)

Variable	Advertising	Direct exposure	In a gambling environment	Desire to win	It looked fun
Gambling status					
Problem	6.6% (3)	11.4% (6)	3.9% (4)	2.9% (3)	3.6% (4)
Infrequent	8.1% (8)	7.2% (7)	2.2% (2)	7.1% (5)	4.7% (6)
Regular	11.5% (11)	6.0% (7)	3.1% (3)	4.2% (5)	5.1% (6)
Sex					
Male	9.0% (11)	3.1% (8)	2.8% (6)	6.7% (7)	4.5% (6)
Female	9.6% (11)	9.4% (12)	2.4% (3)	5.3% (6)	5.0% (10)
Age group					
Less than 35 years	19.3% (12)	8.8% (6)	2.4% (3)	7.8% (4)	3.0% (2)
35 years or over	5.3% (10)	6.0% (14)	2.7% (6)	5.1% (9)	5.5% (14)
Ethnicity					
European	7.8% (16)	7.4% (17)	3.0% (9)	5.2% (11)	5.6% (16)
NZ Māori	14.3% (4)	0.0% (0)	0.0% (0)	0.6% (1)	0.0% (0)
Other ethnic group	24.1% (2)	8.5% (3)	0.0% (0)	22.5% (1)	0.0% (0)
Age first gambled					
Younger than 10	6.6% (3)	3.0% (1)	0.3% (1)	6.4% (1)	0.4% (1)
10-14	0.0% (0)	18.4% (5)	3.2% (3)	1.8% (3)	2.1% (2)
15-19	6.2% (5)	5.6% (4)	1.9% (2)	6.2% (5)	3.0% (4)
20-29	19.8% (9)	3.8% (4)	3.8% (2)	10.5% (3)	9.8% (5)
30 or older	14.0% (5)	7.1% (6)	4.3% (1)	1.6% (1)	9.0% (4)
Total	9.4% (22)	6.8% (20)	2.6% (9)	5.9% (13)	4.8% (16)

Variable	Start of lotto	Own initiative	Other	Don't know	NA
Gambling status					
Problem	0.4% (1)	0.4% (1)	1.0% (1)	0.0% (0)	0.0% (0)
Infrequent	1.0% (2)	1.6% (2)	0.5% (1)	2.0% (2)	0.9% (2)
Regular	4.0% (3)	1.2% (1)	0.0% (0)	0.7% (1)	0.0% (0)
Sex					
Male	1.7% (2)	1.1% (1)	0.8% (2)	2.3% (1)	0.7% (1)
Female	2.4% (4)	1.6% (3)	0.0% (0)	0.9% (2)	0.4% (1)
Age group					
Less than 35 years	2.2% (1)	0.0% (0)	1.2% (2)	3.2% (1)	0.0% (0)
35 years or over	2.1% (5)	2.0% (4)	0.0% (0)	0.7% (2)	0.7% (2)
Ethnicity					
European	1.7% (5)	1.1% (3)	0.4% (2)	1.7% (3)	0.6% (2)
NZ Māori	7.7% (1)	6.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Other ethnic group	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Age first gambled					
Younger than 10	1.8% (1)	0.0% (0)	0.0% (0)	1.8% (1)	3.3% (2)
10-14	0.0% (0)	0.0% (0)	2.2% (1)	0.0% (0)	0.0% (0)
15-19	0.0% (0)	1.4% (2)	0.1% (1)	2.7% (1)	0.0% (0)
20-29	0.1% (1)	2.1% (1)	0.0% (0)	0.0% (0)	0.0% (0)
30 or older	12.6% (4)	3.5% (1)	0.0% (0)	1.7% (1)	0.0% (0)
Total	2.1% (6)	1.4% (4)	0.3% (2)	1.4% (3)	0.5% (2)

Both Europeans and Māori indicated that their family and friends were the most common ways they had been introduced to gambling, although Māori mentioned both somewhat more than Europeans did. Both groups also mentioned raffles quite often. Māori more often mentioned advertising. People of other ethnicities differed from Māori and Europeans in that they rarely referred to their family. As in previous sections, the small sample size of this residual ethnic category and Māori should be noted, along with its implications for the reliability of the findings.

It was estimated that nearly a half (48%) of people who reported first gambling before the age of ten were introduced to gambling by raffles. Families were mentioned most often by people who started gambling between the ages of ten to 19. Friends and advertising were mentioned most often by people aged 20-29 years when they reported first gambling. Family, advertising, workmates, and the introduction of Lotto was mentioned most often by people who first gambled at 30 years of age or older.

Gambling Participation when First Started Gambling

Respondents were also asked a series of questions concerning aspects of their initial gambling involvement. First, they were asked to list the type or types of gambling they took part in when they first started gambling. They were then asked, if they were involved in more than one type, which was their preferred type and were there any others that they enjoyed when they first started. Next, they were asked how often they participated in their favourite type, how long usual session lengths were, how much they usually spent per session and who they usually gambled with. Information from these questions is summarised in Tables 17, 18 and 19.

From Table 17 it can be seen that other lotteries and raffles was the form of gambling most often participated in when people first started gambling, followed by betting on horse and dog races, Lotto, Instant Kiwi, non-casino gaming machines and card games for money. Other forms were mentioned by less than five percent of adults.

In contrast to the non-problem groups, problem gamblers much more often participated in card games and housie when they first began gambling. They less often mentioned Instant Kiwi and other lotteries and raffles. Relative to regular non-problem gamblers, they also less often mentioned Lotto in this regard.

Greater mention of other lotteries and raffles is the most notable difference between infrequent gamblers and people in the other two gambling status groups. This group also had somewhat lower participation in betting on horse and dog races than did regular and problem gamblers.

Males more often than females first participated in betting on horse and dog races and card games. Females, on the other hand, somewhat more often participated in non-casino gaming machines and other lotteries and raffles.

Table 17: Gambling Activities Participated in when First Started Gambling by Age, Age First Started Gambling, Gambling Status, Gender, Age and Ethnicity[1]

Variable	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles	0900 telephone competitions
Gambling status						
Problem	16.8% (7)	2.9% (3)	0.0% (0)	0.0% (0)	25.3% (24)	0.0% (0)
Infrequent	20.6% (13)	16.3% (11)	0.0% (0)	0.0% (0)	59.1% (51)	0.0% (0)
Regular	30.0% (21)	13.0% (9)	1.1% (1)	3.1% (3)	40.1% (41)	0.0% (0)
Sex						
Male	24.8% (17)	16.1% (9)	0.0% (0)	1.0% (1)	42.6% (46)	0.0% (0)
Female	24.1% (24)	13.4% (14)	0.8% (1)	1.5% (2)	55.6% (70)	0.0% (0)
Age group						
Less than 35 years	56.6% (24)	43.0% (16)	0.0% (0)	0.0% (0)	23.8% (16)	0.0% (0)
35 years or over	11.5% (17)	3.1% (7)	0.6% (1)	1.8% (3)	60.8% (100)	0.0% (0)
Ethnicity						
European	21.3% (31)	12.8% (18)	0.5% (1)	1.5% (3)	52.1% (107)	0.0% (0)
NZ Māori	44.1% (6)	21.9% (4)	0.0% (0)	0.0% (0)	49.3% (7)	0.0% (0)
Other ethnic group	40.6% (4)	29.0% (1)	0.0% (0)	0.0% (0)	23.9% (2)	0.0% (0)
Age first gambled						
Younger than 10	5.3% (1)	0.2% (1)	0.0% (0)	0.0% (0)	67.1% (12)	0.0% (0)
10-14	6.7% (1)	12.8% (2)	0.0% (0)	0.0% (0)	59.0% (24)	0.0% (0)
15-19	24.3% (11)	20.0% (11)	0.0% (0)	1.1% (1)	49.5% (45)	0.0% (0)
20-29	31.6% (14)	19.0% (6)	2.2% (1)	2.2% (1)	31.3% (16)	0.0% (0)
30 or older	41.7% (14)	7.4% (3)	0.0% (0)	2.3% (1)	57.0% (19)	0.0% (0)
Total	24.4% (41)	14.5% (23)	0.5% (1)	1.3% (3)	50.2% (116)	0.0% (0)

Variable	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races	Other sports betting
Gambling status						
Problem	0.0% (0)	0.0% (0)	1.2% (1)	16.8% (13)	42.2% (33)	1.5% (1)
Infrequent	0.6% (1)	3.0% (2)	0.0% (0)	13.4% (10)	28.0% (26)	0.0% (0)
Regular	5.0% (5)	1.0% (1)	0.0% (0)	8.3% (8)	38.9% (36)	2.5% (2)
Sex						
Male	3.0% (3)	1.8% (1)	0.1% (1)	5.9% (8)	39.5% (54)	1.6% (2)
Female	2.0% (3)	2.3% (2)	0.0% (0)	15.4% (23)	28.3% (41)	0.7% (1)
Age group						
Less than 35 years	1.2% (1)	2.7% (1)	0.1% (1)	12.5% (12)	29.0% (21)	1.5% (1)
35 years or over	2.9% (5)	1.8% (2)	0.0% (0)	11.0% (19)	34.5% (74)	0.9% (2)
Ethnicity						
European	2.8% (6)	2.4% (3)	0.0% (1)	9.9% (25)	34.5% (87)	1.3% (3)
NZ Māori	0.0% (0)	0.0% (0)	0.0% (0)	21.6% (2)	15.9% (3)	0.0% (0)
Other ethnic group	0.0% (0)	0.0% (0)	0.0% (0)	18.3% (4)	36.3% (5)	0.0% (0)

Age first gambled						
Younger than 10	0.0% (0)	0.0% (0)	0.0% (0)	29.4% (6)	17.5% (9)	0.0% (0)
10-14	0.0% (0)	0.0% (0)	0.0% (0)	14.2% (4)	37.5% (17)	4.2% (1)
15-19	4.5% (4)	2.5% (1)	0.1% (1)	4.5% (5)	32.2% (38)	0.1% (1)
20-29	1.9% (1)	3.7% (1)	0.0% (0)	11.5% (9)	56.6% (25)	2.0% (1)
30 or older	1.8% (1)	2.3% (1)	0.0% (0)	13.5% (7)	11.4% (6)	0.0% (0)
Total	2.4% (6)	2.1% (3)	0.0% (1)	11.4% (31)	32.9% (95)	1.1% (3)

Variable	Dice Games for Money	Card games for money	Housie for Money	Money Bets with friends/workmates	Other Gaming Activities
Gambling status					
Problem	0.5% (1)	31.1% (21)	12.4% (10)	4.2% (5)	3.1% (3)
Infrequent	1.1% (1)	8.0% (8)	1.6% (1)	0.6% (1)	0.7% (1)
Regular	2.0% (3)	5.0% (7)	4.7% (5)	2.6% (5)	4.9% (4)
Sex					
Male	2.5% (4)	12.4% (24)	2.5% (6)	0.5% (6)	1.6% (5)
Female	0.7% (1)	4.0% (12)	3.7% (10)	1.6% (5)	3.1% (3)
Age group					
Less than 35 years	0.0% (0)	2.7% (10)	0.6% (4)	0.0% (0)	4.4% (2)
35 years or over	2.0% (5)	9.4% (26)	4.3% (12)	2.2% (11)	1.7% (6)
Ethnicity					
European	1.2% (4)	8.3% (31)	2.5% (12)	1.8% (11)	1.3% (6)
NZ Māori	4.6% (1)	2.7% (3)	11.3% (3)	0.0% (0)	15.6% (2)
Other ethnic group	0.0% (0)	3.0% (2)	1.7% (1)	0.0% (0)	0.0% (0)
Age first gambled					
Younger than 10	4.0% (1)	4.1% (5)	4.0% (1)	3.2% (1)	0.0% (0)
10-14	0.1% (1)	8.0% (9)	0.6% (3)	0.3% (2)	12.3% (5)
15-19	0.6% (1)	8.4% (13)	4.7% (6)	2.1% (5)	0.1% (1)
20-29	3.9% (2)	12.7% (7)	2.5% (5)	1.9% (3)	1.0% (1)
30 or older	0.0% (0)	0.9% (2)	2.8% (1)	0.0% (0)	2.8% (1)
Total	1.4% (5)	7.5% (36)	3.2% (16)	1.5% (11)	2.5% (8)

1. Multiple responses are possible

Substantial differences are evident between younger and older adults. Younger adults were estimated to have much higher levels of initial gambling participation in Lotto and Instant Kiwi. Older adults had much higher levels of participation in other lotteries and raffles and card games for money, and somewhat greater participation in betting on horse and dog races.

Māori and people of other ethnicities more often mentioned first participating in Lotto, Instant Kiwi and non-casino gaming machines than Europeans did. People of other ethnicities less often mentioned other lotteries or raffles than either European or Māori. Māori, relative to the other two ethnic categories, also more often mentioned housie and other gaming activities and less often mentioned betting on horse or dog races.

Relative to other age groups, people who reported that they first gambled before the age of 15 years and people who indicated that they first gambled at the age of 30 years or older more often participated in other lotteries and raffles at that time. The form mentioned next most often by the group that commenced gambling at the youngest age, i.e. younger than ten years, was non-casino gaming machines. For the group that started gambling between the ages of ten to 14 years, betting on horse or dog races was the second most frequently mentioned form.

Relative to people who said they began gambling before the age of 15 years, those who commenced gambling later more often participated in Lotto. With the exception of the oldest age category (people who started gambling aged 30 years or older), people who commenced gambling after the age of 15 years also more often mentioned Instant Kiwi

and less often mentioned other lotteries and raffles. The group that commenced gambling between the ages of 20 to 29 years differed from the others in that it was the only one that mentioned another gambling form more often than Lotto and other lotteries/raffles. Over a half of the people in this group (57%) engaged in betting on horse and dog races when they first started gambling.

Table 18 provides comparable information to that given in Table 17 for the form of gambling that was preferred when people first started gambling. The results for the study group as a whole are generally similar to those for gambling participation, with other lotteries and raffles and betting on horse or dog racing mentioned most often, followed by Lotto, Instant Kiwi, non-casino gaming machines and card games.

Table 18: Favourite Gambling Activity when First Started Gambling by Gambling Status, Gender, Age, Ethnicity and Age First Gambled

Variable	No Favourite	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles
Gambling status						
Problem	8.9% (4)	4.0% (3)	0.0% (0)	0.0% (0)	0.0% (0)	15.4 (14)
Infrequent	13.8% (15)	9.1% (7)	10.9% (7)	0.0% (0)	0.0% (0)	32.7 (28)
Regular	9.0% (8)	20.5% (15)	4.9% (3)	0.0% (0)	0.0% (0)	20.6 (23)
Sex						
Male	8.5% (8)	9.6% (9)	10.8% (3)	0.0% (0)	0.0% (0)	22.3% (27)
Female	14.0% (19)	16.5% (16)	6.2% (7)	0.0% (0)	0.0% (0)	30.7% (38)
Age group						
Less than 35 years	4.4% (5)	26.5% (13)	25.2% (8)	0.0% (0)	0.0% (0)	7.0% (8)
35 years or over	14.7% (22)	8.3% (12)	1.1% (2)	0.0% (0)	0.0% (0)	35.5% (57)
Ethnicity						
European	13.0% (24)	10.1% (18)	9.5% (10)	0.0% (0)	0.0% (0)	28.6% (58)
NZ Māori	4.6% (1)	33.4% (5)	0.0% (0)	0.0% (0)	0.0% (0)	16.7% (5)
Other ethnic group	3.4% (2)	34.7% (2)	0.0% (0)	0.0% (0)	0.0% (0)	23.9% (2)
Age first gambled						
Younger than 10	13.1% (5)	13.9% (4)	0.0% (0)	0.0% (0)	0.0% (0)	45.7% (13)
10-14	10.6% (4)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	30.9% (13)
15-19	11.4% (8)	6.7% (5)	17.3% (6)	0.0% (0)	0.0% (0)	29.3% (27)
20-29	6.5% (4)	20.5% (8)	3.6% (2)	0.0% (0)	0.0% (0)	16.7% (8)
30 or older	20.5% (6)	36.6% (8)	7.1% (2)	0.0% (0)	0.0% (0)	15.1% (4)
Total	11.7% (27)	13.6% (25)	8.1% (10)	0.0% (0)	0.0% (0)	27.2% (65)

Variable	0900 telephone competitions	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races
Gambling status						
Problem	0.0% (0)	0.0% (0)	0.0% (0)	1.2% (1)	11.3% (8)	29.5% (23)
Infrequent	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	9.4% (6)	17.4% (17)
Regular	0.0% (0)	3.6% (3)	0.0% (0)	0.0% (0)	2.7% (3)	28.6% (26)
Sex						
Male	0.0% (0)	2.4% (2)	0.0% (0)	0.1% (1)	4.4% (5)	28.2% (38)
Female	0.0% (0)	0.8% (1)	0.0% (0)	0.0% (0)	8.4% (12)	18.2% (28)
Age group						
Less than 35 years	0.0% (0)	0.0% (0)	0.0% (0)	0.1% (1)	9.3% (8)	21.4% (14)
35 years or over	0.0% (0)	2.1% (3)	0.0% (0)	0.0% (0)	5.6% (9)	22.7% (52)
Ethnicity						
European	0.0% (0)	1.7% (3)	0.0% (0)	0.0% (1)	5.5% (14)	22.6% (60)
NZ Māori	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	21.7% (2)	11.4% (2)
Other ethnic group	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	1.7% (1)	34.6% (4)
Age first gambled						
Younger than 10	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	17.8% (4)	5.7% (5)
10-14	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	9.8% (1)	37.4% (16)
15-19	0.0% (0)	3.1% (2)	0.0% (0)	0.1% (1)	4.7% (4)	16.5% (23)
20-29	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (4)	40.2% (17)
30 or older	0.0% (0)	2.4% (1)	0.0% (0)	0.0% (0)	6.9% (4)	10.8% (5)

Total	0.0% (0)	1.5% (3)	0.0% (0)	0.0% (1)	6.7% (17)	22.3% (66)
Variable	**Other sports betting**	**Dice Games for Money**	**Card Games for Money**	**Housie for Money**	**Money Bets with friends/work mates**	**Other Gaming Activities**
Gambling status						
Problem	1.6% (1)	0.0% (0)	23.7% (14)	2.2% (2)	1.1% (1)	1.1% (1)
Infrequent	0.0% (0)	0.0% (0)	6.8% (6)	0.0% (0)	0.0% (0)	0.0% (0)
Regular	2.6% (2)	0.5% (1)	1.8% (3)	1.7% (1)	1.3% (2)	2.2% (1)
Sex						
Male	1.6% (2)	0.5% (1)	9.0% (15)	1.7% (1)	0.9% (2)	0.1% (1)
Female	0.7% (1)	0.0% (0)	2.7% (8)	0.1% (2)	0.3% (1)	1.5% (1)
Age group						
Less than 35 years	1.5% (1)	0.0% (0)	1.4% (6)	0.1% (1)	0.0% (0)	3.1% (1)
35 years or over	0.9% (2)	0.3% (1)	6.9% (17)	1.0% (2)	0.8% (3)	0.1% (1)
Ethnicity						
European	1.2% (3)	0.2% (1)	5.9% (20)	1.0% (3)	0.7% (3)	0.0% (1)
NZ Māori	0.0% (0)	0.0% (0)	2.1% (2)	0.0% (0)	0.0% (0)	10.1% (1)
Other ethnic group	0.0% (0)	0.0% (0)	1.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Age first gambled						
Younger than 10	0.0% (0)	0.0% (0)	1.4% (4)	0.0% (0)	2.4% (1)	0.0% (0)
10-14	4.2% (1)	0.0% (0)	0.6% (3)	0.2% (1)	0.0% (0)	6.4% (2)
15-19	0.1% (1)	0.0% (0)	8.5% (11)	1.9% (1)	0.6% (2)	0.0% (0)
20-29	2.0% (1)	1.0% (1)	8.4% (4)	0.2% (1)	0.0% (0)	0.0% (0)
30 or older	0.0% (0)	0.0% (0)	0.6% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Total	1.1% (3)	0.2% (1)	5.3% (23)	0.8% (3)	0.6% (3)	0.9% (2)

It was estimated that twelve percent of people did not have a favourite form of gambling when they first started gambling.

Problem gamblers much more often than non-problem gamblers expressed a preference for betting on card games. They less often indicated that Lotto or other lotteries or raffles were their favourite form. Both problem and regular gamblers more often than infrequent gamblers favoured betting on horse or dog races. Problem gamblers and infrequent gamblers more often favoured non-casino gaming machines.

Males more often than females indicated that their favourite forms of gambling were card games and betting on horse or dog races. Females more often mentioned Lotto, other lotteries and raffles and non-casino gaming machines. They also more often did not have a favourite form.

As with gambling participation, substantial differences are apparent for younger versus older adults. Fifteen percent of adults aged 35 years or over did not have a favourite form when they first commenced gambling. Only four percent of adults aged less than 35 years responded likewise. Lotto or Instant Kiwi were the favourite forms for over half of the younger adults but less than ten percent of older adults. Relatively more young adults also favoured non-casino gaming machines. Older adults, on the other hand, much more often preferred other lotteries and raffles and card games. There was no difference between the two age groups with respect to betting on horse or dog races.

Relative to Māori and people of other ethnicities, Europeans more often did not have a favourite form when they started gambling. The sample sizes for Māori and people of other ethnicities are too small to justify confidence in the reliability of the apparent differences in preferences.

People who said they first gambled before the age of ten years most often preferred other lotteries or raffles at that time. **Gaming machines outside casinos were mentioned next most often, a surprising finding given age restrictions on venues where machines are located.**

People who commenced gambling prior to the age of 20 years also mentioned other lotteries and raffles quite often. **However, for people who first gambled between the ages of ten to 14 years, betting on horse or dog races was mentioned more often than other lotteries or raffles.** People who commenced gambling between the ages of 20 to 29 years also mentioned horse or dog races most often. Much smaller numbers in the youngest and oldest groups indicated that this was their favourite form of gambling at that time.

Lotto was more often mentioned by people who reported first gambling at the age of 20 years or older. However, as indicated, in the case of the younger adult group, track betting was mentioned more frequently than Lotto. Relative to the other age groupings, those in the older adult group more often did not have a favourite form.

Table 19 provides additional information on people's involvement in their favourite gambling activity when they first started gambling. Frequency of participation, usual expenditure per gambling session, usual session duration and usual gambling partner/s are included.

The most notable findings indicated in Table 19 concern problem gamblers. From the outset of their gambling careers, it is evident that they report more frequent participation in their favourite form of gambling, substantially higher expenditure and longer session lengths. They also somewhat more often reported usually having gambled with other family members or work-mates and less often indicate that they gambled alone.

It was estimated that most infrequent gamblers (63%) participated less than once a month in their favourite gambling activity when they first started gambling. Over a third of the regular gamblers were also estimated to have gambled less than once a month at that time, although the total of those who gambled once a week or once a fortnight was higher. Regular gamblers more often than infrequent gamblers gambled with a partner or friends. They less often gambled with other family members.

Males were estimated to have a higher frequency of participation in their favourite form of gambling than females. Males also had higher average expenditure and longer typical session lengths. They somewhat more often than females gambled with work-mates or on their own. Females more often gambled at this time with their partners.

While there was no difference between younger and older adults with respect to the percentage that gambled once a week or more often when they first started gambling, older adults were estimated to have somewhat more often gambled once a month or less at this time. No difference was evident between these groups with respect to the average amount spent per gambling session on their favourite form of gambling. However given that older adults, on average, first gambled at a time when the purchasing power of the dollar was higher, in real terms they may have spent more than their younger counterparts. Older adults were also estimated to have longer average

gambling sessions. They somewhat more often gambled with friends or partners and less often gambled with other members of their families.

Relative to Europeans, Māori and people of other ethnicities much more often participated once a week or more in their favourite form of gambling when they first started gambling. However, people of other ethnicities had a bimodal distribution in that over a half were estimated to have gambled less than once a month, the same percentage as Europeans. Expenditure differences between the ethnic groups were small and are probably not reliable. Europeans indicated that their usual gambling sessions were much longer than those of Māori and people of other ethnicities. Māori and people of other ethnicities more often gambled alone than Europeans did. People of other ethnicities more often gambled with other family members and less often gambled with friends.

Table 19: Frequency of Participation, Usual Expenditure, Usual Time Spent Gambling and Usual Partner for Favourite Gambling Activity when First Started Gambling by Gambling Status, Gender, Age, Ethnicity and Age First Gambled

Variable	Frequency of participation for favourite gambling activity when first started gambling					
	Everyday	Several times per week	Once per week	Once per fortnight	Once per month	Less than once per month
Gambling status						
Problem	3.8% (3)	24.7% (11)	15.4% (11)	13.2% (7)	14.1% (11)	28.8% (24)
Infrequent	1.3% (1)	4.4% (2)	13.7% (10)	9.4% (6)	8.3% (7)	63.0% (45)
Regular	1.2% (1)	2.3% (3)	29.5% (20)	13.1% (9)	17.0% (13)	37.0% (34)
Sex						
Male	1.9% (4)	8.3% (12)	27.6% (24)	16.5% (14)	12.8% (13)	32.9% (38)
Female	0.9% (1)	1.0% (4)	14.6% (17)	6.8% (8)	11.5% (18)	65.3% (65)
Age group						
Less than 35 years	0.1% (1)	7.3% (7)	17.2% (7)	24.6% (13)	6.5% (8)	44.2% (23)
35 years or over	1.9% (4)	2.8% (9)	21.6% (34)	4.9% (9)	14.5% (23)	54.3% (80)
Ethnicity						
European	1.6% (5)	1.9% (9)	18.6% (32)	12.9% (21)	12.1% (29)	53.0% (96)
NZ Māori	0.0% (0)	20.6% (3)	26.5% (6)	0.0% (0)	20.6% (2)	32.3% (5)
Other ethnic group	0.0% (0)	12.4% (4)	32.6% (3)	1.8% (1)	0.0% (0)	53.3% (2)
Age first gambled						
Younger than 10	0.0% (0)	12.4% (2)	9.6% (4)	4.8% (2)	4.2% (4)	69.0% (19)
10-14	0.3% (1)	0.1% (1)	10.0% (3)	2.9% (1)	10.6% (4)	76.1% (26)
15-19	1.6% (3)	3.0% (4)	23.4% (17)	17.3% (12)	12.6% (13)	42.1% (32)
20-29	3.1% (1)	3.7% (5)	18.7% (8)	13.9% (6)	15.6% (9)	44.9% (16)
30 or older	0.0% (0)	4.2% (4)	36.9% (9)	3.0% (1)	14.1% (1)	41.9% (10)
Total	1.3% (5)	4.2% (16)	20.2% (41)	11.0% (22)	12.1% (31)	51.2% (103)

Variable	Usual spend per session ($)		Usual time per session (minutes)	
	Mean	Standard deviation	Mean	Standard deviation
Gambling status				
Problem	33.31 (66)	84.6	121.5 (68)	126.6
Infrequent	5.22 (63)	7.7	87.8 (67)	177.4
Regular	7.76 (80)	14.9	81.6 (80)	137.6
Sex				
Male	9.29 (101)	28.9	108.7 (105)	190.5
Female	5.76 (108)	7.1	68.7 (110)	129.0
Age group				
Less than 35 years	7.70 (60)	20.3	60.3 (60)	114.5
35 years or over	7.06 (149)	19.4	98.8 (155)	176.7
Ethnicity				
European	7.18 (184)	20.8	96.0 (189)	170.8
NZ Māori	8.56 (16)	9.5	36.6 (17)	55.6
Other ethnic group	6.54 (9)	11.1	22.1 (9)	30.2

Age first gambled				
Younger than 10	2.73 (27)	2.3	58.3 (30)	118.2
10-14	9.25 (35)	12.8	192.0 (36)	286.9
15-19	6.64 (78)	19.1	86.7 (79)	138.3
20-29	8.67 (44)	19.3	70.0 (45)	105.5
30 or older	8.61 (25)	32.5	27.4 (25)	62.3
Total	7.27 (209)	19.7	86.2 (215)	160.1

Variable	**Usual partner for favourite gambling activity when first started gambling**							
	Partner	**Other family**	**Friends**	**Acquaint-ances**	**Strangers**	**No one**	**Workmates**	**Other**
Gambling status								
Problem	5.7% (6)	34.5% (27)	25.1% (22)	1.0% (1)	1.0% (1)	17.3% (14)	15.3% (8)	0.0% (0)
Infrequent	6.8% (7)	28.5% (23)	24.1% (21)	2.7% (2)	1.9% (2)	30.1% (25)	5.8% (3)	0.0% (0)
Regular	17.8% (17)	14.0% (15)	32.3% (31)	1.1% (1)	0.0% (0)	26.0% (19)	7.6% (9)	1.2% (1)
Sex								
Male	4.6% (5)	20.9% (30)	26.8% (34)	2.7% (3)	1.9% (2)	31.3% (33)	10.7% (12)	1.2% (1)
Female	16.2% (25)	24.0% (35)	28.1% (40)	1.5% (1)	0.6% (1)	25.5% (25)	4.1% (8)	0.0% (0)
Age group								
Less than 35 years	7.5% (6)	34.4% (24)	21.9% (19)	0.0% (0)	0.0% (0)	27.1% (15)	9.2% (3)	0.0% (0)
35 years or over	13.0% (24)	17.7% (41)	29.9% (55)	2.8% (4)	1.6% (3)	28.3% (43)	5.9% (17)	0.7% (1)
Ethnicity								
European	11.2% (26)	22.6% (57)	29.4% (66)	2.4% (4)	1.3% (3)	24.9% (49)	7.7% (17)	0.6% (1)
NZ Māori	11.2% (2)	18.9% (5)	23.1% (6)	0.0% (0)	0.0% (0)	46.8% (6)	0.0% (0)	0.0% (0)
Other ethnic group	13.6% (2)	29.0% (3)	10.0% (2)	0.0% (0)	0.0% (0)	42.0% (3)	5.5% (3)	0.0% (0)
Age first gambled								
Younger than 10	5.9% (2)	37.8% (16)	28.3% (7)	6.4% (1)	2.3% (1)	13.2% (5)	2.3% (1)	3.7% (1)
10-14	6.3% (1)	41.3% (18)	28.5% (13)	0.3% (1)	0.3% (1)	23.4% (7)	0.0% (0)	0.0% (0)
15-19	10.2% (8)	19.3% (21)	32.2% (33)	0.0% (0)	2.0% (1)	22.4% (21)	14.1% (13)	0.0% (0)
20-29	17.6% (13)	19.0% (8)	26.4% (16)	4.8% (2)	0.0% (0)	29.7% (12)	5.1% (5)	0.0% (0)
30 or older	16.2% (6)	0.6% (2)	12.8% (5)	0.0% (0)	0.0% (0)	67.7% (13)	0.4% (1)	0.0% (0)
Total	11.4% (30)	22.7% (65)	27.5% (74)	2.0% (4)	1.1% (3)	27.9% (58)	6.9% (20)	0.5% (1)

People who first gambled between the ages of ten to 14 years had the highest expenditure per session and longest average typical gambling sessions. Those who first gambled at the age of 30 years or older had the shortest typical sessions. People who first gambled before the age of 15 years more often did so with other family members. Relative to the other groups, people who first gambled between the ages of 15 to 19 years more often participated in their favourite form with work-mates. Relatively more people who started gambling when they were older than 19 years indicated that they gambled with their partner. Those who first gambled at the age of 30 years or older more often did so alone. Less gambled with friends.

Relationship of Early Gambling Preferences to Subsequent Gambling Preferences

The respondents' favourite form of gambling when they first started gambling was examined in relation to their current favourite form of gambling. Respondents' favourite form five years ago was also examined in relation to their current favourite form. Table 20 shows relationships between initial gambling preferences (i.e. when people first started gambling) and their current gambling preferences. Overall, approximately two-thirds of people changed their preference from the time they started gambling. Percentages indicating no change in preference are underlined in Table 20.

From inspection of Table 20, it is evident that the majority of people currently reported that Lotto was their favourite form. While a substantial minority of these people preferred Lotto at the time they first started gambling, the majority had initially favoured other

forms of gambling, most notably other lotteries or raffles and betting on horse or dog races.

A moderately large number of those whose current favourite was Lotto were estimated to have no favourite form when they first gambled or to have preferred some other type of gambling at that time. People in this 'other' gambling preference category were those who predominantly favoured a continuous form other than non-casino gaming machines or betting on horse and dog races. The only people who did not contribute significantly to the large category of people who currently favoured Lotto were those who initially favoured non-casino gaming machines. People in this group indicated that they either continued to favour non-casino gaming machines or some other continuous form of gambling.

Table 20: Favourite Form of Gambling when First Started Gambling by Favourite Form Currently

Variable	Current favourite gambling activity						
	No Favourite	**Lotto**	**Other lotteries/ raffles**	**Non-casino gaming machines**	**Betting on horse or dog races**	**Other gambling activities**	**Totals**
Favourite gambling activity when first started gambling							
No Favourite	1.4% (3)	6.2% (13)	3.0% (6)	0.0% (1)	1.3% (1)	0.8% (3)	11.7% (27)
Lotto	0.6% (1)	12.3% (19)	0.0% (0)	0.3% (1)	0.1% (3)	0.3% (1)	13.6% (25)
Other Lotteries/raffles	2.4% (4)	15.2% (33)	5.4% (12)	0.1% (4)	1.8% (5)	2.4% (7)	27.2% (65)
Non-casino gaming machines	0.3% (1)	0.6% (1)	0.8% (1)	1.9% (7)	0.0% (0)	3.1% (7)	6.7% (17)
Betting on horse or dog races	0.1% (4)	11.4% (27)	0.0% (0)	1.3% (4)	5.7% (21)	3.9% (10)	22.3% (66)
Other gambling activities	1.4% (5)	8.0% (16)	0.3% (1)	1.2% (4)	0.4% (2)	7.2% (21)	18.4% (49)
Totals	6.2% (18)	53.6% (109)	9.5% (20)	4.8% (21)	8.4% (32)	17.7% (49)	100% (249)

Most people who currently favoured other lotteries or raffles initially preferred this type of gambling or had no preference when they first started gambling. Few initially preferred a continuous form of gambling.

While many people who currently preferred non-casino gaming machines indicated that this was their favourite type of gambling activity from the outset, others had initially preferred betting on horse or dog races or other forms of continuous gambling.

The majority of people who currently preferred betting on horse or dog races had done so at the time they first gambled. Small numbers had other preferences initially, other than other lotteries or raffles.

People who reported currently having a preference for other forms of gambling also included a large number of people who had favoured gambling activities within this category from the outset. However, moderately large numbers had also favoured betting on horse or dog races, non-casino gaming machines or other lotteries or raffles. Smaller numbers had initially had no favourite or preferred Lotto.

Relationships between favourite forms of gambling five years ago and current favourite forms are shown in Table 21. From the information presented in Table 20, it appeared

that only about a third of people currently still preferred the gambling activity that was their favourite when they first started gambling. From inspection of Table 21 it appears that substantially more, slightly less than two-thirds, retained their preference over the shorter five-year interval.

Consideration of the Lotto column in Table 21 indicates that the great majority of people who reported that Lotto was currently their favourite form of gambling also indicated that this was their favourite form five years ago.

Table 21: Favourite Form of Gambling Five Years Ago by Favourite Form Currently

Variable	Current favourite gambling activity						
	No Favourite	Lotto	Other Lotteries/ raffles	Non-casino gaming machines	Betting on horse or dog races	Other gambling activities	Totals
Favourite gambling activity five years ago							
No Favourite	1.6% (3)	2.7% (5)	2.3% (4)	0.4% (2)	0.0% (0)	0.9% (3)	7.9% (17)
Lotto	0.9% (2)	40.4% (80)	0.8% (3)	1.4% (6)	3.0% (5)	3.7% (13)	50.1% (109)
Other Lotteries/raffles	1.6% (3)	1.4% (2)	6.8% (12)	0.0% (1)	0.0% (0)	1.4% (2)	11.2% (20)
Non-casino gaming machines	0.0% (0)	0.0% (1)	0.0% (0)	0.9% (7)	0.0% (1)	0.2% (4)	1.2% (13)
Betting on horse or dog races	0.1% (4)	4.3% (9)	0.0% (0)	1.0% (2)	4.8% (23	1.9% (2)	12.2% (40)
Other gambling activities	1.5% (2)	7.2% (8)	0.0% (0)	0.1% (2)	1.0% (2)	7.7% (19)	17.5% (33)
Totals	5.8% (14)	56.0% (105)	9.8% (19)	3.8% (20)	8.9% (31	15.7% (43)	100% (232)

A minority of people who preferred Lotto currently had, five years ago, preferred other forms, most notably betting on horse or dog races or forms of gambling not listed separately. Similarly, the majority of people who currently favoured other lotteries or raffles also preferred other lotteries and raffles five years ago. A minority indicated that they did not previously have a favourite gambling activity or that they had preferred Lotto. None preferred a continuous form of gambling five years ago. By looking across the Lotto row in Table 21 it can be seen that for every person who changed their initial preference for Lotto, four retained it. In the case of other lotteries and raffles the change ratio was higher, approximately two to three.

People who currently preferred non-casino gaming machines are of interest in that, five years ago, three times as many indicated that they had preferred another gambling activity or that they had no favourite form. However, while most people who currently favoured gaming machines previously favoured other forms, by looking across the non-casino gaming machine row, it is apparent that most of the small number of people who preferred gaming machines five years ago continued to do so. People who currently preferred continuous gambling forms in the 'other' category were virtually equally likely to have favoured some other form or to have no favourite five years ago. In contrast to those who initially preferred non-casino gaming machines, people in this category more often shifted their preference five years later to another gambling activity, particularly Lotto.

In the case of people who reported that betting on horse or dog races was their favourite gambling activity currently, more than half were estimated to have also preferred this type of gambling five years ago. Most of those who had preferred another form at this time preferred Lotto. From looking across the track betting row it is evident that, like those who preferred 'other' types of gambling five years, this group also displayed moderately high transition. Again, as with people who preferred 'other' forms, most who changed their preference moved to Lotto.

The group that had no favourite gambling activity five years ago evidenced the most instability. Approximately four times as many developed another preference than continued to report having no favourite form. Most of the people who reported a preference currently said it was for Lotto or other lotteries or raffles.

Changes in Gambling Participation over Time

The questions relating to initial gambling involvement (Tables 17, 18 and 19) were repeated with respect to participants' gambling five years prior to their interview. The relevant information is summarised in Tables 22, 23, and 24.

Participation

Table 22 provides information concerning gambling activities that people reported that they took part in five years ago. From the estimates shown in this table, it is evident that Lotto was the form most often engaged in at that time. This was followed, in descending rank order, by other lotteries and raffles, Instant Kiwi and betting on horse or dog races. From respondent reports, it was estimated that other forms were engaged in by less than five percent of adults.

Regular gamblers much more often participated in Lotto five years ago than did problem gamblers and infrequent gamblers. However, all three of the gambling groups engaged in this form more often than other forms.

Relative to the two non-problem groups, problem gamblers were estimated to participate more often in betting on horse and dog races, non-casino gaming machines, card games for money and other sports betting. They also participated in a number of other continuous forms of gambling more than did people in the other two groups. However, the sub-samples are relatively small and the differences may not be reliable. They less often participated in other lotteries and raffles and somewhat less often in Instant Kiwi.

Few gender differences are evident from the information provided in Table 22, other than males participating more often in Lotto and less often in other lotteries and raffles.

With respect to age, people aged under 35 years more often did not gamble five years ago than was the case for people aged 35 years and older. The younger adults somewhat more often participated in Instant Kiwi, much less often purchased other lottery or raffle tickets and somewhat less often took part in Lotto.

People of other ethnicities more often than Māori or Europeans did not gamble five years ago. Māori, relative to Europeans, also less often gambled five years ago. Although all three ethnic groupings were estimated to have participated in Lotto more than in other

forms of gambling, people of other ethnicities did so less frequently than Europeans and Māori. Subsample sizes for other forms of gambling are too small to allow meaningful interpretation.

Table 22: Gambling Participation Five Years Ago by Age, Age First Started Gambling, Gambling Status, Gender, Age and Ethnicity[1]

Variable	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles	0900 telephone competitions
Gambling status						
Problem	75.5% (52)	21.8% (16)	0.0% (0)	1.5% (2)	21.1% (19)	5.1% (3)
Infrequent	59.3% (51)	28.9% (23)	0.0% (0)	1.2% (1)	38.9% (36)	0.0% (0)
Regular	86.9% (81)	23.0% (25)	3.3% (2)	4.9% (4)	35.1% (36)	0.0% (0)
Sex						
Male	80.1% (90)	26.5% (28)	0.0% (0)	0.9% (2)	30.0% (33)	0.4% (3)
Female	64.8% (94)	26.1% (36)	2.3% (2)	4.1% (5)	42.0% (58)	0.0% (0)
Age group						
Less than 35 years	61.7% (44)	33.5% (19)	3.1% (1)	5.5% (3)	15.0% (15)	0.6% (3)
35 years or over	75.0% (140)	23.3% (45)	0.6% (1)	1.6% (4)	45.5% (76)	0.0% (0)
Ethnicity						
European	72.2% (161)	29.3% (59)	0.5% (1)	2.2% (6)	39.7% (83)	0.0% (1)
NZ Māori	69.0% (14)	12.6% (4)	10.1% (1)	10.1% (1)	31.7% (7)	1.4% (2)
Other ethnic group	60.2% (9)	1.5% (1)	0.0% (0)	0.0% (0)	1.5% (1)	0.0% (0)
Age first gambled						
Younger than 10	54.0% (19)	20.0% (7)	0.0% (0)	3.2% (1)	37.9% (12)	0.6% (1)
10-14	73.2% (33)	40.1% (13)	6.1% (1)	6.1% (1)	39.5% (17)	0.3% (1)
15-19	79.4% (70)	32.1% (28)	0.0% (0)	1.0% (2)	37.6% (31)	0.2% (1)
20-29	78.4% (40)	23.7% (12)	2.2% (1)	5.5% (3)	34.7% (19)	0.0% (0)
30 or older	53.3% (22)	8.7% (4)	0.0% (0)	0.0% (0)	34.6% (12)	0.0% (0)
Total	71.2% (184)	26.6% (64)	1.3% (2)	2.7% (7)	36.8% (91)	0.2% (3)

Variable	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races	Other sports betting
Gambling status						
Problem	0.0% (0)	8.2% (5)	8.0% (7)	25.0% (20)	47.9% (37)	12.5% (5)
Infrequent	2.7% (2)	4.4% (4)	3.5% (4)	2.2% (3)	20.0% (19)	1.2% (1)
Regular	1.9% (2)	5.4% (5)	2.9% (3)	6.7% (8)	19.0% (17)	0.8% (1)
Sex						
Male	4.6% (3)	6.4% (7)	5.2% (8)	3.6% (15)	20.7% (43)	1.6% (4)
Female	0.6% (1)	3.9% (7)	2.1% (6)	5.7% (16)	20.4% (30)	1.3% (3)
Age group						
Less than 35 years	2.8% (2)	0.1% (1)	2.4% (4)	3.2% (11)	18.0% (15)	3.6% (5)
35 years or over	2.1% (2)	6.9% (13)	3.8% (10)	5.4% (20)	21.5% (58)	0.5% (2)
Ethnicity						
European	2.7% (4)	5.6% (12)	3.9% (13)	5.2% (27)	19.5% (62)	0.3% (5)
NZ Māori	0.0% (0)	2.1% (2)	0.9% (1)	2.6% (3)	18.5% (5)	0.7% (1)
Other ethnic group	0.0% (0)	11.4% (1)	0.0% (0)	1.7% (1)	37.8% (6)	3.8% (1)
Age first gambled						
Younger than 10	0.0% (0)	0.3% (1)	3.4% (2)	4.2% (4)	24.4% (8)	4.0% (3)
10-14	2.1% (2)	9.6% (4)	10.8% (6)	0.9% (4)	24.8% (16)	0.2% (1)
15-19	0.0% (0)	4.9% (5)	2.5% (4)	6.2% (13)	8.4% (22)	0.2% (1)
20-29	1.8% (1)	7.7% (3)	2.2% (1)	6.0% (6)	36.9% (18)	4.3% (2)
30 or older	2.3% (4)	0.5% (1)	0.5% (1)	4.0% (4)	21.0% (9)	0.0% (0)
Total	2.3% (4)	4.9% (14)	3.4% (14)	4.8% (31)	20.5% (73)	1.4% (7)

Variable	Dice Games for Money	Card games for money	Housie for Money	Money Bets with friends/workmates	Other Gaming Activities
Gambling status					
Problem	4.1% (2)	17.1% (10)	6.9% (6)	8.9% (7)	3.2% (1)
Infrequent	0.0% (0)	2.5% (2)	2.2% (2)	2.0% (3)	0.0% (0)
Regular	1.1% (1)	3.3% (2)	4.7% (3)	1.2% (1)	2.1% (1)
Sex					
Male	1.4% (3)	2.6% (8)	3.4% (2)	0.6% (5)	0.2% (1)
Female	0.0% (0)	3.8% (6)	3.4% (9)	2.9% (6)	1.5% (1)

Age group					
Less than 35 years	2.1% (3)	6.2% (8)	3.7% (4)	0.8% (4)	3.1% (1)
35 years or over	0.0% (0)	2.1% (6)	3.3% (7)	2.4% (7)	0.1% (1)
Ethnicity					
European	0.6% (2)	2.5% (8)	2.8% (9)	2.0% (8)	0.0% (0)
NZ Māori	0.7% (1)	10.5% (4)	10.1% (1)	2.1% (3)	11.2% (2)
Other ethnic group	0.0% (0)	3.0% (2)	1.7% (1)	0.0% (0)	0.0% (0)
Age first gambled					
Younger than 10	1.3% (2)	14.5% (5)	0.0% (0)	4.0% (3)	0.0% (0)
10-14	0.0% (0)	0.4% (1)	6.6% (4)	3.9% (2)	6.1% (1)
15-19	1.3% (1)	4.2% (6)	4.8% (4)	1.1% (5)	0.3% (1)
20-29	0.0% (0)	0.5% (1)	3.2% (3)	2.6% (1)	0.0% (0)
30 or older	0.0% (0)	0.4% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Total	0.6% (3)	3.3% (14)	3.4% (11)	1.9% (11)	1.0% (2)

1 Multiple responses are possible

While over half of people in all of the 'age first starting gambling' groups were estimated to have participated in Lotto five years ago, fewer of those who began gambling before the age of ten years or at the age of 30 years or older did. Relative to people in the other groups, those who first started gambling at the age of 30 years or over least often mentioned Instant Kiwi. In comparison to the other groups, the 'youngest' group more often mentioned playing card games for money. The other groups that commenced gambling before the age of 20 years mentioned Instant Kiwi more often than other participants. People who began gambling between the ages of 20 to 29 years more often referred to betting on horse or dog races. The 'younger' group (15 - 19 years), on the other hand, least often mentioned this form of gambling. Other lotteries and raffles was the form of gambling that showed most consistency across all of these groups, ranging between 35 and 40 percent.

Preferences

In addition to being asked about the types of gambling that they took part in five years ago, participants were asked which forms they preferred taking part in. This information is provided in Table 23.

Lotto was by far the most preferred form five years ago. A half of adults who reported gambling at some time in their lives were estimated to prefer Lotto. Betting on horse or dog races was mentioned second most often, followed by other lotteries and raffles and Instant Kiwi. **Betting on horse and dog races was the form most often mentioned by problem gamblers who much more often mentioned this form than did people in the non-problem groups. They also differed from these groups in that they much more often mentioned non-casino gaming machines and less often mentioned Lotto.** Relative to infrequent gamblers, both problem and regular gamblers less often indicated a preference for Instant Kiwi and other lotteries and raffles.

Apart from men somewhat more often having a preference for betting on horse and dog races and women more often having a preference for other lotteries and raffles, gender differences appear to be modest.

People aged less than 35 years more often preferred Instant Kiwi. Those aged 35 years and older more often preferred Lotto and other lotteries and raffles.

Over half of Māori and Europeans had a preference for Lotto. Somewhat less people of other ethnicities were estimated to have this preference.

Table 23: Favourite Form of Gambling Five Years Ago by Gambling Status, Gender, Age, Ethnicity and Age First Gambled

Variable	No Favourite	Lotto	Instant Kiwi	Daily Keno	TeleBingo	Other Lotteries/ raffles
Gambling status						
Problem	8.7% (4)	30.8% (21)	3.0% (3)	0.0% (0)	0.0% (0)	1.8%(2)
Infrequent	8.9% (8)	44.0% (34)	15.5% (7)	0.0% (0)	0.0% (0)	18.6% (15)
Regular	6.6% (5)	59.3% (54)	3.4% (3)	0.0% (0)	0.0% (0)	2.8% (3)
Sex						
Male	9.1% (10)	47.5% (45)	11.5% (4)	0.0% (0)	0.0% (0)	5.5% (4)
Female	7.0% (7)	52.2% (64)	8.5% (9)	0.0% (0)	0.0% (0)	15.5% (16)
Age group						
Less than 35 years	6.0% (5)	31.1% (20)	28.1% (9)	0.0% (0)	0.0% (0)	7.0% (2)
35 years or over	8.5% (12)	56.2% (89)	4.0% (4)	0.0% (0)	0.0% (0)	12.5% (18)
Ethnicity						
European	8.4% (14)	50.6% (98)	11.2% (13)	0.0% (0)	0.0% (0)	11.1% (18)
NZ Māori	0.0% (0)	52.6% (8)	0.0% (0)	0.0% (0)	0.0% (0)	19.1% (2)
Other ethnic group	12.7% (3)	36.5% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Age first gambled						
Younger than 10	7.2% (2)	42.3% (13)	6.2% (4)	0.0% (0)	0.0% (0)	29.5% (6)
10-14	6.4% (3)	45.5% (16)	13.9% (2)	0.0% (0)	0.0% (0)	5.6% (2)
15-19	4.8% (4)	54.9% (46)	13.4% (4)	0.0% (0)	0.0% (0)	11.2% (7)
20-29	7.4% (3)	51.8% (25)	5.7% (2)	0.0% (0)	0.0% (0)	3.7% (2)
30 or older	21.2% (5)	45.4% (9)	2.6% (1)	0.0% (0)	0.0% (0)	13.1% (3)
Total	7.9% (17)	50.1% (109)	9.8% (13)	0.0% (0)	0.0% (0)	11.2% (20)

Variable	0900 telephone competitions	Internet gaming activities	Casino gaming machines	Other casino games	Non-casino gaming machines	Betting on horse or dog races
Gambling status						
Problem	0.0% (0)	0.0% (0)	2.6% (1)	1.7% (2)	11.4% (11)	32.2% (23)
Infrequent	0.0% (0)	0.0% (0)	1.3% (1)	0.0% (0)	0.7% (1)	9.7% (7)
Regular	0.0% (0)	0.8% (1)	0.0% (0)	2.0% (2)	0.9% (1)	13.5% (10)
Sex						
Male	0.0% (0)	0.8% (1)	1.5% (1)	2.0% (3)	0.6% (7)	15.2% (30)
Female	0.0% (0)	0.0% (0)	0.2% (1)	0.0% (1)	1.5% (6)	9.8% (10)
Age group						
Less than 35 years	0.0% (0)	0.0% (0)	0.0% (0)	2.9% (2)	0.9% (5)	13.3% (7)
35 years or over	0.0% (0)	0.5% (1)	1.0% (2)	0.3% (2)	1.2% (8)	11.8% (33)
Ethnicity						
European	0.0% (0)	0.4% (1)	0.8% (1)	1.0% (4)	1.2% (12)	10.1% (32)
NZ Māori	0.0% (0)	0.0% (0)	1.2% (1)	0.0% (0)	0.9% (1)	12.5% (3)
Other ethnic group	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	50.8% (5)
Age first gambled						
Younger than 10	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	3.7% (2)	0.4% (1)
10-14	0.0% (0)	0.0% (0)	4.1% (1)	4.0% (1)	0.3% (2)	13.9% (11)
15-19	0.0% (0)	0.0% (0)	0.0% (0)	0.6% (3)	0.3% (4)	6.2% (14)
20-29	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.4% (2)	31.0% (11)
30 or older	0.0% (0)	2.9% (1)	0.7% (1)	0.0% (0)	3.8% (3)	10.2% (3)
Total	0.0% (0)	0.4% (1)	0.8% (2)	0.9% (4)	1.2% (13)	12.2% (40)

Variable	Other sports betting	Dice Games for Money	Card Games for Money	Housie for Money	Money Bets with friends/workmates	Other Gaming Activities
Gambling status						
Problem	0.0% (0)	2.1% (1)	2.8% (2)	1.0% (1)	2.0% (1)	0.0% (0)
Infrequent	0.0% (0)	0.0% (0)	1.4% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Regular	0.9% (1)	1.2% (1)	3.6% (2)	5.1% (3)	0.0% (0)	0.0% (0)
Sex						
Male	0.9% (1)	1.4% (2)	1.9% (2)	1.8% (1)	0.2% (1)	0.0% (0)
Female	0.0% (0)	0.0% (0)	2.8% (3)	2.6% (3)	0.0% (0)	0.0% (0)

Age group						
Less than 35 years	0.0% (0)	2.5% (2)	3.5% (2)	4.3% (2)	0.3% (1)	0.0% (0)
35 years or over	0.5% (1)	0.0% (0)	2.0% (3)	1.6% (2)	0.0% (0)	0.0% (0)
Ethnicity						
European	0.4% (1)	0.7% (2)	2.8% (5)	1.4% (3)	0.0% (0)	0.0% (0)
NZ Māori	0.0% (0)	0.0% (0)	0.0% (0)	12.8% (1)	0.9% (1)	0.0% (0)
Other ethnic group	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Age first gambled						
Younger than 10	3.3% (1)	0.7% (1)	6.8% (2)	0.0% (0)	0.0% (0)	0.0% (0)
10-14	0.0% (0)	0.0% (0)	0.0% (0)	6.4% (2)	0.0% (0)	0.0% (0)
15-19	0.0% (0)	1.3% (1)	4.1% (3)	3.0% (2)	0.2% (1)	0.0% (0)
20-29	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
30 or older	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	0.4% (1)	0.6% (2)	2.4% (5)	2.2% (4)	0.1% (1)	0.0% (0)

Relative to Māori and people of other ethnicities, Europeans more often preferred Instant Kiwi. The most notable feature for people of other ethnicities was that 51 percent were estimated to prefer betting on horse and dog races and that none preferred other lotteries or raffles. However, as mentioned previously, the sample sizes for Māori and people of other ethnicities are small and the ethnic findings must be treated with caution.

People who reported first gambling before the age of ten years much more often expressed a preference for other lotteries and raffles five years ago than people in the other 'age first gambled' groups. People in the other two groups that commenced gambling prior to the age of 20 years relatively more often had a preference for Instant Kiwi. Substantially more people who first gambled between the ages of 20 to 29 years indicated a preference five years ago for betting on horse and dog races than people in the other groups. Relative to the other groups, more people who first gambled at the age of 30 years or older did not have a favourite form of gambling five years ago. Consistent with the gambling participation data presented in Table 22, substantial numbers in all of these age groups indicated that they preferred Lotto five years ago, albeit that there was a somewhat lower degree of variability across the groups. In contrast, with respect to the most preferred form, there was much greater variability for other lotteries and raffles.

Table 24 provides additional information about participants' favourite forms of gambling five years ago. Frequency of participation, usual expenditure per gambling session, usual session duration and persons usually gambled with are examined by gambling status, gender, age, ethnicity and age first gambled.

As was found with respect to frequency of participation in the favourite form of gambling when people first reported gambling (see Table 19), problem gamblers much more often reported gambling once a week or more. Over three-quarters were estimated to have gambled this often compared with 17 percent of current infrequent gamblers and 59 percent of current regular gamblers. Very few non-problem gamblers gambled more than once a week. In the case of problem gamblers, half of those who gambled weekly were estimated to do so daily or several times a week.

Whereas it was estimated that over a half (59%) of regular gamblers at the time of the survey were also regular gamblers five years ago, more than three-quarters (83%) of infrequent gamblers had the same status five years previously. **This suggests that infrequent gambling is a more stable state than frequent gambling.**

Table 24: Frequency of Participation, Time and Money Spent per Session and Usual Gambling Partners for Favourite Gambling Activity Five Years Ago by Gambling Status, Gender, Age, Ethnicity and Age First Gambled

Variable	Frequency of participation for favourite gambling activity five years ago					
	Everyday	Several times per week	Once per week	Once per fortnight	Once per month	Less than once per month
Gambling status						
Problem	14.9% (6)	23.3% (17)	37.7% (27)	10.4% (7)	1.9% (2)	11.9% (11)
Infrequent	0.0% (0)	2.8% (1)	14.4% (13)	18.6% (11)	16.0% (13)	48.1% (40)
Regular	0.6% (1)	1.3% (2)	56.8% (52)	8.7% (7)	11.8% (10)	20.7% (16)
Sex						
Male	1.7% (6)	5.4% (14)	40.3% (45)	18.7% (11)	12.6% (11)	21.3% (22)
Female	0.1% (1)	1.0% (6)	27.9% (47)	11.0% (14)	14.7% (14)	45.5% (45)
Age group						
Less than 35 years	1.3% (4)	6.1% (5)	22.8% (19)	18.9% (10)	9.3% (6)	41.6% (19)
35 years or over	0.5% (3)	1.4% (15)	37.3% (73)	12.2% (15)	15.7% (19)	32.9% (48)
Ethnicity						
European	0.6% (6)	0.7% (13)	33.9% (80)	13.2% (22)	16.4% (25)	35.3% (61)
NZ Māori	0.0% (0)	17.7% (4)	30.7% (9)	17.6% (2)	0.0% (0)	34.0% (4)
Other ethnic group	3.9% (1)	8.5% (3)	24.5% (3)	23.2% (1)	0.0% (0)	39.8% (2)
Age first gambled						
Younger than 10	0.5% (1)	12.2% (4)	20.5% (11)	15.5% (5)	10.9% (3)	40.4% (11)
10-14	0.5% (2)	0.8% (2)	28.6% (17)	12.1% (2)	33.1% (7)	25.0% (9)
15-19	0.8% (2)	1.0% (7)	31.4% (31)	14.3% (9)	13.3% (10)	39.2% (29)
20-29	0.0% (0)	0.8% (3)	47.0% (23)	10.7% (5)	9.7% (4)	31.8% (11)
30 or older	2.3% (2)	3.8% (4)	32.6% (10)	21.2% (4)	2.8% (1)	37.4% (7)
Total	0.7% (7)	2.8% (20)	33.0% (92)	14.2% (25)	13.8% (25)	35.5% (67)

Variable	Usual spend per session ($)		Usual time per session (minutes)	
	Mean	Standard deviation	Mean	Standard deviation
Gambling status				
Problem	109.04 (67)	573.4	121.0 (67)	159.6
Infrequent	7.93 (66)	22.9	29.3 (65)	80.0
Regular	11.16 (80)	14.4	57.8 (80)	105.2
Sex				
Male	21.54 (100)	168.0	64.9 (99)	120.7
Female	6.39 (113)	7.6	30.2 (113)	72.5
Age group				
Less than 35 years	20.98 (52)	217.2	53.5 (52)	104.8
35 years or over	10.15 (161)	22.8	42.0 (160)	94.7
Ethnicity				
European	12.33 (188)	117.4	41.6 (187)	92.6
NZ Māori	14.39 (17)	19.6	76.8 (17)	140.6
Other ethnic group	19.60 (8)	35.2	46.4 (8)	73.7
Age first gambled				
Younger than 10	6.93 (30)	17.0	20.3 (29)	49.6
10-14	20.20 (37)	40.6	80.0 (37)	134.6
15-19	13.94 (83)	168.9	39.1 (83)	89.7
20-29	10.51 (42)	17.6	32.8 (42)	59.9
30 or older	7.81 (21)	14.7	60.6 (21)	129.7
Total	12.83 (213)	109.9	44.9 (212)	97.5

Variable	Usual partner for favourite gambling activity five years ago							
	Partner	Other family	Friends	Acquaint-ances	Strangers	No one	Workmates	Other
Gambling status								
Problem	22.9% (17)	18.3% (13)	20.6% (17)	1.8% (3)	2.6% (2)	22.7% (27)	11.2% (4)	0.0% (0)
Infrequent	29.2% (24)	19.5% (13)	16.5% (12)	1.7% (1)	0.0% (0)	29.5% (25)	3.1% (3)	0.6% (1)
Regular	34.0% (27)	16.0% (12)	16.7% (13)	0.9% (1)	0.0% (0)	29.0% (28)	3.6% (3)	0.0% (0)
Sex								
Male	33.5% (33)	12.1% (15)	19.5% (21)	1.0% (3)	0.0% (0)	29.9% (38)	3.9% (6)	0.0% (0)
Female	29.0% (35)	22.2% (23)	14.7% (21)	1.6% (2)	0.2% (2)	28.4% (42)	3.4% (4)	0.5% (1)

Age group								
Less than 35 years	3.6% (10)	25.6% (18)	27.5% (15)	0.0% (0)	0.0% (0)	33.7% (16)	9.6% (6)	0.0% (0)
35 years or over	39.7% (58)	15.6% (20)	13.2% (27)	1.8% (5)	0.1% (2)	27.5% (64)	1.7% (4)	0.4% (1)
Ethnicity								
European	32.3% (61)	17.6% (33)	15.7% (35)	1.6% (5)	0.0% (1)	29.7% (75)	2.7% (5)	0.4% (1)
NZ Māori	22.4% (5)	12.7% (3)	33.3% (6)	0.0% (0)	1.0% (1)	20.2% (4)	10.6% (3)	0.0% (0)
Other ethnic group	18.0% (2)	39.0% (2)	2.4% (1)	0.0% (0)	0.0% (0)	33.1% (1)	7.5% (2)	0.0% (0)
Age first gambled								
Younger than 10	14.5% (3)	25.1% (7)	23.7% (9)	9.2% (3)	0.1% (1)	21.5% (12)	5.9% (2)	0.0% (0)
10-14	20.8% (12)	37.9% (12)	16.3% (7)	0.3% (2)	0.0% (0)	19.7% (13)	5.1% (2)	0.0% (0)
15-19	37.9% (32)	10.3% (12)	15.8% (15)	0.0% (0)	0.0% (0)	31.2% (30)	4.1% (4)	0.8% (1)
20-29	32.1% (15)	20.2% (7)	12.3% (8)	0.0% (0)	0.0% (0)	34.1% (14)	1.3% (1)	0.0% (0)
30 or older	41.4% (6)	0.0% (0)	19.6% (3)	0.0% (0)	0.9% (1)	37.7% (11)	0.5% (1)	0.0% (0)
Total	30.8% (68)	18.0% (38)	16.7% (42)	1.4% (5)	0.1% (2)	29.0% (80)	3.6% (10)	0.3% (1)

It was estimated that males much more often than females gambled frequently (once a week or more) five years ago. More than twice as many women than men gambled less than once a month at that time.

Older adults more often than younger adults gambled on a weekly or more frequent basis five years ago. However, within the group that gambled more than once a week five years ago, relatively more were aged less than 35 years. Younger adults also more often indicated that they gambled less than once a month at that time.

Māori and people of other ethnicities more often gambled daily or several times a week five years ago than Europeans did. More Europeans gambled once a month or less.

People who reported that they first gambled before the age of ten more frequently gambled more than once a week than people who commenced gambling at the age of ten years or older. However, people who first gambled between the ages of 20 to 29 most often said they gambled once a week five years ago. People in this group and the group that reported first gambling aged 30 years or older were somewhat less likely to have gambled once a month or less frequently five years ago.

Self Assessed Changes in Gambling Participation and Reasons Given for Changes in Gambling Involvement

Participants were asked to compare their overall gambling participation five years ago with their current overall gambling participation. They were asked to indicate whether they considered that their gambling involvement had increased a little, increased a lot, stayed much the same, decreased a little or decreased a lot.

From respondent reports, it was estimated that four percent had increased their frequency of gambling a lot, 13 percent had increased a little, 47 percent had stayed much the same, ten percent had decreased a little and 15 percent had decreased a lot. Twelve percent either did not know or declined to answer this question.

Respondent reports of changed gambling participation were reclassified as having increased, stayed much the same, or decreased. People who didn't know or declined to answer were omitted. In Table 25, the re-classified categories are examined in relation to:

- age first started gambling
- preferred form of gambling when first started gambling

- preferred form of gambling five years ago
- frequency of participation in favourite form of gambling five years ago
- gambling status, gender, age and ethnicity.

It was estimated that:

- 19 percent increased their participation
- 53 percent did not change their participation
- 28 percent decreased their participation.

People who reported first gambling before the age of 15 years much less often increased their gambling participation and much more often decreased their gambling participation during the past five years compared to those who commenced gambling when they were aged 20 years or older. People who first gambled between the ages of 15 and 19 years also frequently decreased their involvement. More than twice as many people in each of these three groups had decreases than increases.

People who reported commencing gambling at the age of 20 years or older differed in that substantially more increased than decreased their involvement. Of the various groups, people who started gambling between the ages of 20 and 29 years showed the most stability, with 73 percent estimated to have gambling participation that was the same as it was five years before.

Changes in gambling participation during the past five years were examined in relation to the survey respondents' preferred gambling activity when they first started gambling. People who had an initial preference for Lotto most often increased their gambling participation. Approximately a third of these people were estimated to have increased their participation during the past five years. Similar percentages displayed no change or decreased participation. People who had an initial preference for any of the other forms of gambling more often decreased than increased their involvement. People who initially preferred other lotteries or raffles, betting on horse or dog races or who had no preferred form evidenced the most stability over time. Over 60 percent of people in each of these categories indicated that their gambling participation had not changed.

Participation changes during the past five years were also examined in relation to preferred form of gambling five years ago. The results were markedly different from those pertaining to gambling preferences at the time when people first started gambling.

People who preferred betting on horse or dog races or who preferred other lotteries or raffles differed from those who preferred any of the other gambling forms in that substantially more increased rather than decreased their participation. People who preferred non-casino gaming machines or forms not listed separately are notable in that substantially more decreased than increased their participation. In the case of gaming machines, nearly eight times as many indicated decreases than indicated increases.

Table 25 also shows relationships between frequency of participation in preferred forms of gambling five years ago and reported changes in gambling participation since then.

Table 25: Past Five Years Changes in Gambling Participation by Age First Started Gambling, Past Gambling Preferences and Degree of Involvement, Gambling Status, Gender, Age and Ethnicity

	Change in Gambling		
	Increased	**Stayed the same**	**Decreased**
Age first gambled			
Younger than 10	12.2% (7)	54.2% (12)	33.5% (13)
10 - 14	12.7% (9)	55.4% (16)	32.0% (15)
15 - 19	16.8% (20)	44.4% (36)	38.9% (33)
20 - 29	20.1% (12)	73.1% (25)	6.8% (6)
30 or older	35.8% (9)	47.7% (11)	16.6% (8)
Preferred gambling activity when first started gambling			
Lotto	35.5% (8)	31.7% (6)	32.8% (8)
Instant Kiwi	25.3% (3)	34.0% (1)	40.7% (2)
Other lotteries/raffles	13.9% (13)	65.1% (36)	21.0% (15)
Non-casino gaming machines	23.1% (4)	46.3% (2)	30.6% (7)
Betting on horse and dog races	15.0% (14)	60.7% (29)	24.3% (19)
Card games	25.5% (7)	30.3% (5)	44.2% (9)
Other gambling activities	21.4% (4)	42.3% (7)	36.3% (9)
No preference	10.3% (4)	61.2% (14)	28.5% (6)
Preferred gambling activity five years ago			
Lotto	17.2% (24)	55.6% (56)	27.2% (29)
Instant Kiwi	13.1% (5)	51.9% (4)	35.0% (4)
Other lotteries/raffles	33.7% (6)	54.3% (12)	12.0% (2)
Non-casino gaming machines	7.1% (3)	37.6% (2)	55.4% (8)
Betting on horse and dog races	20.2% (10)	64.8% (13)	15.1% (17)
Other gambling activities	17.9% (6)	15.7% (3)	66.5% (11)
No preference	14.3% (3)	58.8% (10)	26.9% (4)
Frequency of participation in favourite gambling activity five years ago			
Every day	0.0% (0)	38.8% (1)	61.2% (5)
Several times per week	25.3% (5)	7.3% (2)	67.4% (11)
Once per week	22.2% (26)	53.6% (41)	24.2% (21)
Once per fortnight	16.9% (8)	55.2% (8)	27.9% (7)
Once per month	23.2% (5)	52.9% (11)	23.9% (5)
Less often than once per month	15.6% (10)	53.7% (27)	30.8% (20)
Gambling status			
Problem	36.3% (29)	18.9% (12)	44.8% (31)
Infrequent	12.7% (10)	54.1% (37)	33.2% (27)
Regular	24.7% (18)	54.9% (51)	20.5% (17)
Sex			
Male	12.3% (23)	54.9% (47)	32.9% (42)
Female	23.6% (34)	51.9% (53)	24.5% (33)
Age group			
Less than 35 years	19.7% (19)	34.5% (14)	45.8% (24)
35 years or over	18.4% (38)	59.1% (86)	22.6% (51)
Ethnicity			
European	17.2% (48)	55.0% (93)	27.8% (63)
NZ Māori	44.9% (8)	17.3% (2)	37.9% (7)
Other ethnic group	2.4% (1)	78.6% (5)	19.0% (5)
Total	18.7% (57)	53.2% (100)	28.1% (75)

It was estimated that people who reported gambling more than once a week five years ago experienced the most change. Sixty-one percent of those who gambled on a daily basis at that time indicated that their gambling had decreased. None indicated that it had increased. Over two-thirds of those who gambled several times a week also evidenced decreased involvement relative to a quarter that indicated increased involvement. Only seven percent did not change their level of participation.

A slight majority of people in each of the remaining gambling participation categories (once per week, once per fortnight, once per month, less than once per month) indicated

that their frequency of participation had not changed during the past five years. In no instance did increases exceed decreases.

With respect to gambling status, the problem gambling group displayed the most variability during the past five years. Only 19 percent were estimated to have not changed their level of participation. Forty-five percent were estimated to have decreased participation and 36 percent increased participation. Somewhat more than half of the people in both the regular and infrequent gambling categories indicated that their level of participation had not changed. Slightly more regular gamblers evidenced increases than decreases. More than twice as many infrequent gamblers experienced decreases than increases.

It was estimated that somewhat more than a half of both males and females also did not change their gambling participation during the past five years. In the case of males, almost three times as many indicated decreases than increases. For females, similar percentages mentioned increases and decreases.

People aged less than 35 years displayed more change over time than adults aged 35 years or older. Just over a third of the younger adults had no change compared with 59 percent of older adults. More than twice as many younger adults decreased than increased. Older adults only slightly more often referred to decreases than increases.

Marked differences are apparent with respect to ethnicity. It was estimated that over three-quarters of people in the other ethnic group category (79%) did not change. Those who changed far more often decreased than increased. Over half (55%) of the Europeans also indicated that their level of participation had not changed. In this group, decreases also outnumbered increases, albeit that the ratio was much lower. Relatively few Māori (17%), on the other hand, had participation levels that stayed the same. Forty-five percent increased and 38 percent decreased.

Respondents who had increased or decreased gambling participation during the past five years were asked what they thought led to this change. Table 26 lists reasons separately for people who considered that their gambling had increased and for people who considered that their gambling had decreased.

From Table 26 it is evident that the reasons most often given for increased gambling involvement during the past five years were more money available and more gambling options available. Each of the additional reasons listed was mentioned by less than ten percent of people.

Reasons given by more than ten percent of people for decreased gambling involvement included less money available, loss of interest, not winning, other priorities and a change of circumstances.

Winning a substantial sum of money gambling has been proposed as an important factor in the development of regular gambling patterns and problem gambling (Abbott & Volberg, 1992; 1996; 1999a). To examine this hypothesis, participants were asked if they had ever won a major prize, equivalent to a half or more of their yearly income or if a child at the time) pocket money. Ten percent of people were estimated to have won a major prize of this magnitude.

Table 26: Reasons Given for Increases and Decreases in Gambling Participation During the Past Five Years

Reasons for increased gambling		Reasons for decreased gambling	
More money available	30.2% (20)	Less money available	23.9% (33)
More gambling options available	19.1% (14)	Loss of interest	19.2% (19)
Easier access to gambling	7.2% (15)	Not winning	15.3% (16)
Opening of casinos	6.3% (5)	Other priorities	13.6% (17)
Increased chance of winning	9.4% (4)	Change of circumstances	12.0% (9)
To increase socialising	9.1% (7)	Less time available	5.1% (5)
Because social life has increased	6.2% (2)	More aware of the negative aspects	4.2% (13)
On a winning streak	4.1% (5)	Other	6.7% (7)
Other	8.5% (6)		
Number of responses	78	**Number of responses**	119
Number of respondents	57	**Number of respondents**	75

Respondents who reported having won a major prize were asked if this had affected their gambling in any way. Only four respondents, 13 percent of those who said they had had a big win, indicated that they thought this experience had affected their gambling. In all four instances they reported that it had led them to bet more so that they could win more. Participants were also asked if they had ever been close to winning a sum equivalent to half or more of their annual income. Seventeen percent were estimated to have had this experience. From the perspective of probability theory, in the case of outcomes that are governed by chance alone, a "near miss" is in fact no closer to winning than what is regarded as a "loss." However, many gamblers perceive that they narrowly miss winning and this perception is considered to play an important role in sustaining gambling participation and increasing the likelihood of gambling problems developing. To obtain information about gamblers' perceptions of being close to a big win, people who reported this experience were asked in what way they had been close to winning a big prize. Responses to this open-ended question were categorised and are listed in Table 27.

Table 27: Ways in which People Considered that they Came Close to Winning a Big Prize

One/a few numbers off the Lotto main prize	44.0% (21)
One/a few horses off a big dividend	7.7% (15)
One number off a big Instant Kiwi prize	10.5% (5)
One/A few numbers off the main TeleBingo prize	6.5% (3)
One number off the winning raffle ticket	3.8% (3)
Nearly won a jackpot on a gaming machine	3.9% (3)
Nearly won a jackpot at the casino	0.4% (2)
Won first prize in a competition	19.4% (6)
Close to winning, not specified how	3.9% (2)
Number of responses	60
Number of respondents	56

As with actually winning a major prize, people who reported having been close to winning a major prize were asked if their gambling was affected by it. Sixteen people (29%) indicated that this experience had affected their gambling. Of these 16 people, 69 percent said it had encouraged them to gamble more, 13 percent said it had given them a thrill or excitement, and 19 percent said that it had put them off gambling or resulted in reduced participation.

A number of other factors considered likely to play a role in increasing gambling participation were examined. In addition to asking open-ended questions that have already been described, participants were asked if any of the following had ever led to an increase in their gambling:

- gambling advertisements
- new kinds of gambling
- greater access to gambling
- easier access to credit cards (not debit cards).

They were also asked if anything else has ever led to an increase in their gambling. In each case, five response options were presented (definitely, probably, probably not, definitely not, and can't say either way). Following each question, when respondents reported that one of these factors had led to an increase in their gambling, they were asked which kinds of gambling were involved.

In Table 28, responses to each of the five questions mentioned above are summarised for the total study group.

From Table 28 it is evident that the majority of people did not consider that any of the four specific factors mentioned, or other factors identified by the survey respondents, had ever contributed to an increase in their gambling participation. However, it was estimated that just under a quarter of people thought advertising or the introduction of new forms of gambling definitely or probably had led to an increase in their gambling at some time. A somewhat smaller number considered that the increased ease of gambling had had this effect. Less than two percent indicated that the ready availability of credit cards had this effect. Only seven percent mentioned additional factors that they believed had led to an increase in their gambling behaviour at some time.

Table 28: Respondents Assessments of Whether or Not Advertising, New Kinds of Gambling, Greater Access to Gambling, Easier Access to Credit Cards or other Factors had Ever Increased their Gambling

	Factors increasing gambling					
Response	**Advertising**	**Introduction of new games**	**Increased ease of gambling**	**Using credit cards**	**Other factors**	
Definitely	7.2% (20)	5.9% (22)	4.6% (25)	0.7% (7)	Increased due to other factors	6.5% (35)
Probably	16.1% (41)	16.5% (46)	13.7% (39)	0.8% (7)	No increase in gambling	32.5% (72)
Probably not	19.0% (53)	12.9% (35)	9.7% (30)	1.7% (11)	Increase not due to other	60.7% (148)
Definitely not	56.5% (139)	64.5% (152)	71.7% (159)	96.5% (230)	factors	
Not sure	1.0%(2)	0.0%(0)	0.1%(2)	0.0%(0)	Not applicable	0.3% (1)
Not applicable	0.3% (1)	0.3% (1)	0.3% (1)	0.3% (1)		

Respondents who indicated that a particular factor had definitely or probably led to an increase in their gambling involvement were asked which kinds of gambling increased. The types of gambling that were considered by respondents to be influenced by the various factors outlined in Table 28 are provided in Table 29.

From Table 29 it can be seen that increased Lotto participation was most often attributed to the influence of advertising. It was estimated that over two-thirds of people who considered that advertising had had this effect on their gambling considered that Lotto was the form involved. Fifteen percent mentioned TeleBingo and ten percent mentioned

Instant Kiwi in this regard. Other forms of gambling were rarely considered to be influenced by advertising.

Increased participation in the three types of gambling mentioned in the last paragraph and casino gambling were the ones that were most often mentioned being influenced by the introduction of new types of gambling. Other forms were mentioned by less than five percent of people.

Increased Lotto participation was also mentioned most frequently as being a consequence of the increased ease of gambling, followed in descending rank order by non-casino gaming machines, casinos and Instant Kiwi.

It will be recalled that relatively few people said that they thought that the increased availability of credit cards had influenced their gambling participation. However, of those that did, non-casino gaming machines, other lotteries and raffles, casino gambling and betting on horse and dog races were the forms that were most often mentioned.

Other factors were most often seen to have an influence on Lotto, Instant Kiwi and other lotteries/raffles participation.

Table 29: Types of Gambling Considered to be Engaged in More Frequently as a Consequence of Advertising, New Forms of Gambling, Greater Access to Gambling, Greater Access to Credit Cards and Other Factors

	Factors increasing gambling[1]				
Gambling Form	**Advertising**	**Introduction of new games**	**Increased ease of gambling**	**Using Credit cards**	**Other Factors**
Lotto	67.1% (45)	29.8% (23)	44.8% (32)	0.0% (0)	24.5% (9)
Instant Kiwi	9.8% (11)	12.3% (13)	9.2% (8)	0.0% (0)	22.0% (7)
Keno	1.6% (2)	1.6% (1)	1.8% (1)	0.0% (0)	3.3% (6)
TeleBingo	15.1% (12)	23.2% (13)	1.8% (2)	0.0% (0)	10.5% (3)
Other lotteries/raffles	1.5% (1)	1.5% (2)	2.0% (2)	28.8% (1)	16.6% (4)
Casino	0.4% (4)	14.0% (17)	9.8% (11)	14.0% (4)	10.4% (3)
Betting on horse and dog racing	1.6% (5)	4.1% (6)	1.2% (4)	8.2% (3)	10.7% (4)
Other sports betting	2.1% (4)	1.9% (6)	4.3% (4)	0.0% (0)	0.0% (0)
Non-casino gaming machines	0.3% (1)	4.9% (7)	15.7% (23)	47.1% (9)	0.0% (0)
Telephone competitions	0.0% (0)	0.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)
T.A.B.	0.0%(0)	2.1%(1)	5.9%(5)	0.0% (0)	0.0%(0)
Housie	0.0% (0)	0.0% (0)	0.4% (1)	0.0% (0)	0.0% (0)
Other gambling activities	0.4% (2)	3.9% (4)	3.0% (2)	0.0% (0)	2.0% (5)
Not specified	0.0% (0)	0.6% (1)	0.1% (1)	1.9% (1)	0.0% (0)
Number of responses	87	95	96	18	41
Number of respondents	61	68	64	14	35

1. Multiple responses possible

In Table 30, the reasons given for increased gambling participation are examined in relation to current favourite gambling participation, favourite gambling activity when first started gambling and favourite gambling activity five years ago.

From Table 30 it is apparent that just under a quarter of people consider that gambling advertisements have ever led to an increase in their gambling. People with a current preference for forms of gambling not specifically listed ('other' forms) more often than people with a preference for a specified form of gambling indicated that they believed

advertising had led to an increase in their gambling participation at some time. More than a quarter of people with a current preference for Lotto or card games also were of the view that their gambling had increased as a consequence of advertising. However, it is not known which form or forms of gambling increased for people with these preferences. Sample sizes are too small to meaningfully examine reported gambling increases as a consequence of advertising by other gambling preferences.

A half of people who indicated that they preferred Lotto at the time they first started gambling were estimated to believe that gambling advertising had at some time increased their gambling involvement. People with an initial preference for other lotteries and raffles or 'other' gambling activities were the only others where over a quarter considered that advertising had had this effect.

Table 30: Reasons for Increased Gambling Participation by Favourite Gambling Activity Currently, when First Started Gambling, and Five Years Ago

	Have gambling advertisements ever led to an increase in your gambling?			Have new types of gambling on the market ever led to an increase in your gambling?		
Favourite Activity	**Yes**	**No**	**Not sure**	**Yes**	**No**	**Not sure**
Current preferred gambling activity						
Lotto	28.7% (26)	70.1% (83)	1.3% (1)	20.9% (26)	79.1% (84)	0.0% (0)
Instant Kiwi	9.6% (3)	90.5% (11)	0.0% (0)	21.3% (4)	78.7% (10)	0.0% (0)
Other lotteries/raffles	11.0% (4)	89.1% (16)	0.0% (0)	2.6% (2)	97.4% (18)	0.0% (0)
Non-casino gaming machines	9.3% (4)	90.7% (19)	0.0% (0)	22.9% (8)	77.1% (15)	0.0% (0)
Betting on horse and dog races	7.9% (8)	87.9% (23)	4.3% (1)	36.1% (12)	63.9% (20)	0.0% (0)
Card games played for money	27.2% (1)	72.8% (8)	0.0% (0)	27.8% (1)	72.2% (8)	0.0% (0)
Other gambling activities	38.5% (12)	61.5% (15)	0.0% (0)	47.3% (12)	52.7% (15)	0.0% (0)
No preference	20.7% (3)	79.3% (17)	0.0% (0)	11.5% (3)	88.6% (17)	0.0% (0)
Preferred gambling activity when first started gambling						
Lotto	50.3% (10)	49.8% (15)	0.0% (0)	27.2% (9)	72.8% (16)	0.0% (0)
Instant Kiwi	22.6% (3)	77.5% (7)	0.0% (0)	31.0% (2)	69.0% (8)	0.0% (0)
Other lotteries/raffles	27.5% (18)	72.5% (47)	0.0% (0)	18.1% (15)	81.9% (50)	0.0% (0)
Non-casino gaming machines	11.8% (4)	88.2% (13)	0.0% (0)	34.9% (8)	65.1% (9)	0.0% (0)
Betting on horse and dog races	13.6% (15)	81.7% (49)	4.6% (2)	29.0% (20)	71.0% (46)	0.0% (0)
Card games played for money	16.9% (6)	83.2% (17)	0.0% (0)	9.4% (5)	90.6% (18)	0.0% (0)
Other gambling activities	32.2% (4)	67.8% (18)	0.0% (0)	20.6% (5)	79.4% (17)	0.0% (0)
No preference	5.4% (1)	94.6% (26)	0.0% (0)	7.9% (4)	92.1% (23)	0.0% (0)
Preferred gambling activity five years ago						
Lotto	28.2% (30)	70.3% (78)	1.5% (1)	21.8% (30)	78.2% (79)	0.0% (0)
Instant Kiwi	5.9% (3)	94.1% (10)	0.0% (0)	52.1% (7)	47.9% (6)	0.0% (0)
Other lotteries/raffles	16.8% (3)	83.2% (17)	0.0% (0)	12.5% (2)	87.5% (18)	0.0% (0)
Non-casino gaming machines	10.9% (4)	89.1% (9)	0.0% (0)	21.2% (7)	78.8% (6)	0.0% (0)
Betting on horse and dog races	16.3% (9)	80.5% (30)	3.3% (1)	30.1% (13)	69.9% (27)	0.0% (0)
Card games played for money	67.1% (3)	33.0% (2)	0.0% (0)	64.3% (2)	35.7% (3)	0.0% (0)
Other gambling activities	30.8% (8)	69.2% (30)	0.0% (0)	11.5% (6)	88.5% (32)	0.0% (0)
No preference	4.7% (1)	95.3% (16)	0.0% (0)	4.7% (1)	95.3% (16)	0.0% (0)
Total	23.3% (61)	75.7% (192)	1.0% (2)	22.4% (68)	77.6% (187)	0.0% (0)

	Has the fact that it has become easier to gamble led to an increase in your gambling?			Has the fact that it has become easier to get and use credit cards led to an increase in your gambling?		
Favourite Activity	**Yes**	**No**	**Not sure**	**Yes**	**No**	**Not sure**
Current preferred gambling activity						
Lotto	13.1% (18)	86.9% (92)	0.0% (0)	0.2% (2)	99.8% (108)	0.0% (0)
Instant Kiwi	12.9% (4)	87.1% (10)	0.0% (0)	0.0% (0)	100.0% (14)	0.0% (0)
Other lotteries/raffles	17.3% (4)	82.7% (16)	0.0% (0)	5.5% (1)	94.5% (19)	0.0% (0)
Non-casino gaming machines	33.7% (11)	66.3% (12)	0.0% (0)	11.9% (4)	88.1% (19)	0.0% (0)
Betting on horse and dog races	38.2% (11)	60.9% (20)	1.0% (1)	1.8% (3)	98.2% (29)	0.0% (0)
Card games played for money	33.1% (5)	66.9% (4)	0.0% (0)	1.4% (1)	98.6% (8)	0.0% (0)
Other gambling activities	38.9% (11)	60.7% (15)	0.4% (1)	2.3% (3)	97.7% (24)	0.0% (0)
No preference	0.0% (0)	100.0% (20)	0.0% (0)	0.0% (0)	100.0% (20)	0.0% (0)

Preferred gambling activity when first started gambling						
Lotto	6.5% (3)	93.5% (22)	0.0% (0)	0.0% (0)	100.0% (25)	0.0% (0)
Instant Kiwi	20.0% (3)	80.0% (7)	0.0% (0)	0.0% (0)	100.0% (10)	0.0% (0)
Other lotteries/raffles	23.5% (19)	76.5% (46)	0.0% (0)	2.1% (4)	97.9% (61)	0.0% (0)
Non-casino gaming machines	23.0% (7)	77.0% (10)	0.0% (0)	10.4% (4)	89.6% (13)	0.0% (0)
Betting on horse and dog races	25.5% (15)	74.0% (49)	0.5% (2)	0.5% (2)	99.6% (64)	0.0% (0)
Card games played for money	10.8% (10)	89.2% (13)	0.0% (0)	2.0% (2)	98.0% (21)	0.0% (0)
Other gambling activities	18.2% (3)	81.8% (19)	0.0% (0)	1.6% (2)	98.4% (20)	0.0% (0)
No preference	6.1% (4)	94.0% (23)	0.0% (0)	0.0% (0)	100.0% (27)	0.0% (0)
Preferred gambling activity five years ago						
Lotto	14.5% (23)	85.5% (86)	0.0% (0)	0.5% (3)	99.5% (106)	0.0% (0)
Instant Kiwi	6.4% (4)	93.6% (9)	0.0% (0)	0.0% (0)	100.0% (13)	0.0% (0)
Other lotteries/raffles	21.7% (5)	78.3% (15)	0.0% (0)	5.2% (1)	94.8% (19)	0.0% (0)
Non-casino gaming machines	18.3% (7)	81.7% (6)	0.0% (0)	15.2% (5)	84.8% (8)	0.0% (0)
Betting on horse and dog races	44.2% (13)	55.0% (26)	0.7% (1)	1.5% (4)	98.5% (36)	0.0% (0)
Card games played for money	64.9% (3)	35.2% (2)	0.0% (0)	0.0% (0)	100.0% (5)	0.0% (0)
Other gambling activities	17.6% (8)	82.2% (29)	0.2% (1)	3.0% (1)	97.0% (37)	0.0% (0)
No preference	0.3% (1)	99.8% (16)	0.0% (0)	0.0% (0)	100.0% (17)	0.0% (0)
Total	18.3% (64)	81.6% (189)	0.1% (2)	1.6% (14)	98.5% (241)	0.0% (0)

With regard to preferred form of gambling five years ago, again it was estimated that more than a quarter of people who preferred Lotto or 'other' forms of gambling thought advertising had led to an increase in their gambling. Although over two-thirds of people with a preference for card games reported likewise, this estimate is derived from only three respondents and is unlikely to be reliable.

Again, it was estimated that less than a quarter of people believed that the introduction of new types of gambling had resulted in an increase in their gambling involvement. As in the case of advertisements, people with a current preference for 'other' forms of gambling more often considered that this was a factor in increasing their own gambling involvement. People with a current preference for betting on horse or dog races also relatively more often believed that the advent of new types of gambling had increased their gambling participation.

More than a quarter of people with initial preferences for non-casino gaming machines, Instant Kiwi, betting on horse or dog races, or Lotto were of the view that new forms of gambling had resulted in an increase in their gambling involvement. People who said they preferred Instant Kiwi, betting on horse or dog races, or playing card games five years ago also relatively more often had this viewpoint.

Only 18 percent of people indicated that they believed that "the fact that it has become easier to gamble" had led to an increase in their gambling. However, of those who held this view, proportionately more currently preferred 'other' gambling activities, betting on horse or dog races, card games, non-casino gaming machines, and Lotto.

It was estimated that a quarter of people who preferred betting on horse or dog races at the time when they first started gambling and 44 percent of people with this preference five years ago also were of the view that greater 'ease of gambling' led to an increase in their gambling involvement.

Too few respondents considered that the increased availability of credit cards had influenced their gambling involvement to meaningfully examine subgroup responses. However, although small numbers are involved, it is of possible significance that people with a preference for non-casino gaming machines (currently, 5 years ago and when they started gambling) more often mentioned this than people with other preferences.

While further examination involving larger samples is required, these findings suggest that a minority of people with this preference may gamble more as a consequence of credit cards being more readily available.

The four reasons for increases in gambling involvement just discussed were further considered in relation to gender, age, ethnicity and age when first gambled. This information is provided in Table 31.

From Table 31 it can be seen that it was estimated that just under a third of problem gamblers considered that gambling advertising had resulted in an increase in their gambling involvement, somewhat more than is the case for regular and infrequent gamblers (25% and 22% respectively).

Females and people aged less than 35 years also somewhat more often than males and older adults mentioned that advertisements had had this effect on their own gambling at some time. Although the sample size is small and the finding must be treated with caution, people of other ethnicities much more often reported this influence than Europeans and Māori. People who said they started gambling before the age of 15 years somewhat less often indicated that advertisements had led to an increase in their gambling than did people who said they first gambled at the age of 20 years or older.

Problem gamblers also more often than non-problem gamblers indicated that new types of gambling on the market led to an increase in their gambling. Gender and age differences are not apparent for this factor. With respect to ethnicity, Europeans more experienced this influence than Māori or people of other ethnicities. People who said they first gambled before the age of ten also somewhat more often than people in the other 'age first gambled' groups indicated that their gambling had increased as a consequence of the introduction of new forms of gambling.

Table 31: Reasons for Increased Gambling Participation by Gender, Age, Ethnicity and Age First Gambled

	Have gambling advertisements ever led to an increase in your gambling?			Have new types of gambling on the market ever led to an increase in your gambling?		
Variable	**Yes**	**No**	**Not sure**	**Yes**	**No**	**Not sure**
Gambling status						
Problem	31.6% (22)	68.4% (52)	0.0% (0)	36.2% (28)	63.8% (46)	0.0% (0)
Infrequent	21.7% (16)	77.1% (71)	1.2% (1)	21.1% (15)	78.9% (73)	0.0% (0)
Regular	24.8% (23)	74.4% (69)	0.8% (1)	23.0% (25)	77.0% (68)	0.0% (0)
Sex						
Male	19.2% (31)	79.9% (88)	0.8% (1)	23.0% (30)	77.0% (90)	0.0% (0)
Female	26.2% (30)	72.6% (104)	1.2% (1)	21.9% (38)	78.1% (97)	0.0% (0)
Age group						
Less than 35 years	32.9% (25)	64.8% (42)	2.3% (1)	20.8% (19)	79.2% (49)	0.0% (0)
35 years or over	19.5% (36)	80.1% (150)	0.5% (1)	23.0% (49)	77.0% (138)	0.0% (0)
Ethnicity						
European	21.9% (51)	76.9% (171)	1.2% (2)	24.6% (62)	75.4% (162)	0.0% (0)
NZ Māori	12.0% (5)	88.0% (14)	0.0% (0)	9.9% (3)	90.2% (16)	0.0% (0)
Other ethnic group	60.6% (5)	39.4% (7)	0.0% (0)	9.1% (3)	90.9% (9)	0.0% (0)
Age first gambled						
Younger than 10	17.8% (9)	82.2% (30)	0.0% (0)	30.8% (14)	69.2% (25)	0.0% (0)
10-14	17.9% (7)	79.7% (34)	2.4% (1)	23.8% (10)	76.2% (32)	0.0% (0)
15-19	24.4% (28)	75.6% (65)	0.0% (0)	20.1% (22)	79.9% (71)	0.0% (0)
20-29	29.0% (11)	67.8% (38)	3.2% (1)	23.3% (16)	76.7% (34)	0.0% (0)
30 or older	23.3% (6)	76.7% (25)	0.0% (0)	16.6% (6)	83.4% (25)	0.0% (0)
Total	23.3% (61)	75.7% (192)	1.0% (2)	22.4% (68)	77.6% (187)	0.0% (0)

Variable	Has the fact that it has become easier to gamble led to an increase in your gambling?			Has the fact that it has become easier to get and use credit cards led to an increase in your gambling?		
	Yes	No	Not sure	Yes	No	Not sure
Gambling status						
Problem	45.8% (34)	50.7% (38)	3.5% (2)	17.3% (12)	82.7% (62)	0.0% (0)
Infrequent	18.4% (16)	81.6% (72)	0.0% (0)	0.0% (0)	100.0% (88)	0.0% (0)
Regular	16.1% (14)	83.9% (79)	0.0% (0)	2.4% (2)	97.6% (91)	0.0% (0)
Sex						
Male	16.9% (31)	82.9% (88)	0.2% (1)	1.9% (8)	98.1% (112)	0.0% (0)
Female	19.4% (33)	80.6% (101)	0.1% (1)	1.3% (6)	98.7% (129)	0.0% (0)
Age group						
Less than 35 years	20.6% (24)	79.3% (43)	0.1% (1)	0.9% (4)	99.1% (64)	0.0% (0)
35 years or over	17.4% (40)	82.5% (146)	0.1% (1)	1.8% (10)	98.2% (177)	0.0% (0)
Ethnicity						
European	19.6% (54)	80.3% (168)	0.1% (2)	1.1% (11)	99.0% (213)	0.0% (0)
NZ Māori	10.2% (7)	89.8% (12)	0.0% (0)	6.3% (2)	93.7% (17)	0.0% (0)
Other ethnic group	12.9% (3)	87.1% (9)	0.0% (0)	1.7% (1)	98.3% (11)	0.0% (0)
Age first gambled						
Younger than 10	19.9% (12)	80.1% (27)	0.0% (0)	1.4% (3)	98.6% (36)	0.0% (0)
10-14	15.5% (8)	83.8% (32)	0.8% (2)	0.7% (3)	99.3% (39)	0.0% (0)
15-19	17.1% (24)	82.9% (69)	0.0% (0)	1.7% (5)	98.3% (88)	0.0% (0)
20-29	28.6% (15)	71.4% (35)	0.0% (0)	0.7% (2)	99.4% (48)	0.0% (0)
30 or older	7.1% (5)	92.9% (26)	0.0% (0)	3.7% (1)	96.3% (30)	0.0% (0)
Total	18.3% (64)	81.6% (189)	0.1% (2)	1.6% (14)	98.5% (241)	0.0% (0)

Problem gamblers much more often than non-problem gamblers indicated that it becoming easier to gamble had led to an increase in their participation. Minimal differences are apparent with respect to gender and age for this question. Europeans more often experienced this influence on their gambling than did Māori and people of other ethnicities. With respect to age first gambled, people who commenced gambling between the ages of 20 to 29 years most often mentioned that they gambled more because it had become easier to gamble. Those who reported first gambling at the age of 30 years or over least often gave this reason.

Again, too few people attributed increases in their gambling to easier access to credit cards to warrant discussion of possible subgroup differences. Probably the only finding that may be significant or worth examining further is the relatively large number of problem gamblers (17%) that indicated this was a factor in their increased gambling involvement.

Table 32: 'Big Win' and 'Near Miss' Experiences by Gambling Participation Status

Gambling status	Ever had a big win?		Ever nearly had a big win?	
	Yes	No	Yes	No
Problem	25.4% (15)	74.6% (59)	34.9% (28)	65.1% (46)
Infrequent	9.0% (7)	91.0% (81)	10.8% (9)	89.2% (79)
Regular	10.1% (8)	89.9% (85)	24.3% (19)	75.7% (74)
Total	10.0% (30)	90.0% (225)	17.1% (56)	82.9% (199)

The relationship between 'big win' and 'near miss' experiences is considered further in Table 32 in relation to gambling participation status. As hypothesised, problem gamblers more often had these experiences than people in either of the non-problem groups. A quarter of problem gamblers had had a 'big win' and just over a third nearly had a 'big win'. Regular and infrequent gamblers were estimated

to have similar 'big win' frequencies (10% and 9% respectively). Regular gamblers, on the other hand, more often experienced being close to having a 'big win' than infrequent gamblers (24% and 11% respectively).

3.4 Costs and Benefits of Gambling

Introduction

In this section, results are presented concerning participant responses to questions that address a number of different benefits and costs associated with gambling participation. Professor Mark Dickerson originally developed these questions for inclusion in the 1991 National Survey (Abbott & Volberg, 1991; 1992; 1996) and the Australian 'Four Cities' study (Dickerson et al, 1996). They are grouped together under the following headings: Personal, Interpersonal/Family, Vocation/Employment, Financial, Legal, and Gambling Characteristics. While these groupings have face validity, they have not been formally assessed to determine whether or not they may be regarded as separate scales assessing distinct domains. Although responses to these questions are presented under each of the headings mentioned, this has been done to assist clarity of presentation. In interpreting these responses, each question should be considered in its own right.

As for the SOGS-R items, each question was asked in both a lifetime and past six months format. In contrast to the SOGS-R items, a five point response scale (never, rarely, sometimes, often, always) was used. Respondents were only asked about their past six months experience if they indicated that the situation or experience had applied to them at least sometimes in the past. Thus, in the relevant tables that follow, the 'never' and 'rarely' response options are collapsed. Because few respondents gave 'always' responses to most questions, the 'often' and 'always' categories have also been combined in the tables that follow. These tables provide estimates for the total population of adults who report ever having gambled as well as for problem gamblers, regular non-problem gamblers and infrequent non-problem gamblers.

Personal

Table 33 summarises responses to questions grouped together under the Personal heading.

From Table 33 it is evident that it was estimated that problem gamblers much more often than people in the non-problem groups considered that the following sometimes, often or always applied to them:

- Gambling has been a hobby or an interest
- Felt guilty when finished gambling
- Felt depressed and used gambling to escape
- Felt their gambling was a problem
- Felt depressed after losing heavily gambling
- Went for help with gambling.

Table 33: Personal Benefits and Costs of Gambling

Variable		How often did the following apply to you? Never	Rarely	Sometimes	Often/Always	Don't Know/NA
Gambling has been a hobby and an interest to me						
Ever						
	Problem	9.3% (5)	14.5% (13)	39.6% (27)	36.6% (29)	0.0% (0)
	Infrequent	46.7% (42)	23.1% (21)	24.0% (19)	4.8% (4)	1.5% (3)
	Regular	32.9% (31)	12.4% (12)	34.3% (31)	20.4% (19)	0.0% (0)
	Total	39.8% (78)	18.5% (46)	28.7% (77)	12.2% (52)	0.8% (3)
In the past 6 months						
	Problem	41.6% (31)		18.1% (15)	40.4% (28)	0.0% (0)
	Infrequent	79.2% (71)		14.6% (11)	4.8% (4)	1.5% (3)
	Regular	54.4% (50)		22.0% (21)	23.6% (22)	0.0% (0)
	Total	67.8% (152)		17.7% (47)	13.7% (54)	0.8% (3)
When I have finished gambling, I have felt guilty						
Ever						
	Problem	23.8% (19)	10.2% (10)	31.5% (25)	32.7% (19)	1.8% (1)
	Infrequent	75.5% (68)	9.2% (8)	5.2% (4)	3.7% (3)	6.5% (6)
	Regular	84.4% (78)	7.1% (7)	5.1% (4)	3.4% (4)	0.0% (0)
	Total	77.5% (165)	8.4% (25)	6.0% (33)	4.5% (26)	3.7% (7)
In the past 6 months						
	Problem	55.3% (47)		16.5% (11)	26.4% (15)	1.8% (1)
	Infrequent	92.4% (81)		0.6% (1)	0.6% (1)	6.5% (6)
	Regular	93.8% (88)		5.1% (4)	1.2% (1)	0.0% (0)
	Total	91.8% (216)		2.9% (16)	1.6% (17)	3.7% (7)
I daydreamed about getting a big win						
Ever						
	Problem	20.3% (8)	8.4% (8)	24.7% (19)	44.8% (38)	1.8% (1)
	Infrequent	28.7% (28)	13.9% (10)	25.5% (22)	26.9% (24)	5.0% (5)
	Regular	6.3% (8)	13.2% (10)	39.9% (36)	40.6% (39)	0.0% (0)
	Total	19.2% (44)	13.5% (28)	31.4% (77)	33.1% (101)	2.8% (6)
In the past 6 months						
	Problem	40.7% (27)		23.5% (19)	32.1% (26)	3.7% (2)
	Infrequent	68.2% (61)		13.6% (11)	13.3% (12)	5.0% (5)
	Regular	33.9% (33)		31.3% (30)	34.7% (30)	0.0% (0)
	Total	53.2% (121)		21.2% (60)	22.7% (68)	2.9% (7)
When I felt depressed, I used to gamble to escape						
Ever						
	Problem	54.4% (42)	9.5% (10)	15.9% (12)	18.4% (9)	1.8% (1)
	Infrequent	89.1% (79)	2.8% (3)	0.6% (1)	2.5% (1)	5.0% (5)
	Regular	95.2% (88)	2.5% (2)	2.3% (3)	0.0% (0)	0.0% (0)
	Total	90.5% (209)	2.9% (15)	1.8% (16)	2.0% (10)	2.8% (6)
In the past 6 months						
	Problem	76.4% (62)		8.8% (6)	13.0% (5)	1.8% (1)
	Infrequent	92.5% (83)		0.0% (0)	2.5% (1)	5.0% (5)
	Regular	100.0% (93)		0.0% (0)	0.0% (0)	0.0% (0)
	Total	95.1% (238)		0.3% (6)	1.8% (6)	2.8% (6)
I have felt that my gambling was a problem						
Ever						
	Problem	41.1% (32)	16.6% (11)	20.9% (16)	19.6% (14)	1.8% (1)
	Infrequent	91.5% (82)	3.5% (2)	0.0% (0)	0.0% (0)	5.0% (5)
	Regular	96.2% (89)	2.6% (3)	0.0% (0)	1.2% (1)	0.0% (0)
	Total	91.9% (203)	3.5% (16)	0.7% (16)	1.1% (15)	2.8% (6)
In the past 6 months						
	Problem	75.8% (55)		8.1% (7)	14.3% (11)	1.8% (1)
	Infrequent	95.0% (84)		0.0% (0)	0.0% (0)	5.0% (5)
	Regular	98.8% (92)		0.0% (0)	1.2% (1)	0.0% (0)
	Total	96.0% (231)		0.3% (7)	0.9% (12)	2.8% (6)
After losing heavily at gambling I have felt depressed						
Ever						
	Problem	26.8% (22)	11.0% (9)	29.0% (22)	31.4% (20)	1.8% (1)
	Infrequent	88.5% (78)	4.9% (3)	0.0% (0)	1.2% (2)	5.5% (6)

Regular	94.3% (88)	5.3% (4)	0.4% (1)	0.0% (0)	0.0% (0)
Total	88.9% (188)	5.3% (16)	1.1% (23)	1.7% (22)	3.1% (7)
In the past 6 months					
Problem	62.7% (50)		16.3% (11)	18.2% (11)	2.8% (2)
Infrequent	94.0% (82)		0.0% (0)	0.6% (1)	5.5% (6)
Regular	100.0% (93)		0.0% (0)	0.0% (0)	0.0% (0)
Total	95.5% (225)		0.5% (11)	0.9% (12)	3.1% (8)
My gambling have given me pleasure and fun					
Ever					
Problem	7.0% (1)	1.4% (2)	46.1% (34)	45.5% (37)	0.0% (0)
Infrequent	19.9% (18)	11.3% (11)	39.5% (36)	25.4% (20)	3.8% (4)
Regular	7.7% (9)	8.1% (7)	39.3% (38)	45.0% (39)	0.0% (0)
Total	14.5% (28)	9.7% (20)	39.6% (108)	34.1% (96)	2.1% (4)
In the past 6 months					
Problem	36.8% (27)		35.1% (27)	26.3% (19)	1.9% (1)
Infrequent	62.9% (54)		20.4% (18)	12.9% (13)	3.8% (4)
Regular	38.1% (32)		37.3% (38)	24.6% (23)	0.0% (0)
Total	51.8% (113)		27.8% (83)	18.2% (55)	2.2% (5)
I went for help with my gambling					
Ever					
Problem	82.7% (63)	5.0% (5)	2.4% (3)	8.1% (2)	1.8% (1)
Infrequent	95.0% (84)	0.0% (0)	0.0% (0)	0.0% (0)	5.0% (5)
Regular	100.0% (93)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	96.7% (240)	0.2% (5)	0.1% (3)	0.3% (2)	2.8% (6)
In the past 6 months					
Problem	90.4% (71)		0.7% (1)	7.0% (1)	1.8% (1)
Infrequent	95.0% (84)		0.0% (0)	0.0% (0)	5.0% (5)
Regular	100.0% (93)		0.0% (0)	0.0% (0)	0.0% (0)
Total	96.9% (248)		0.0% (1)	0.2% (1)	2.8% (6)

These differences were present in both the lifetime and past six months data. Correspondingly small numbers of problem gamblers indicated that the above experiences never or rarely applied to them.

Compared to the infrequent non-problem gamblers, it was estimated that relatively large numbers of both problem and regular non-problem gamblers had often or always day dreamed about getting a big win and considered that their gambling had given them pleasure and fun. Regular gamblers also more often than infrequent gamblers (but not problem gamblers) indicated that their gambling had been a hobby or interest.

Over half of the problem gamblers (57%) personally considered that their gambling had been a problem at least rarely. It was estimated that fourteen percent often or always felt this way during the past six months and that a further eight percent sometimes felt this way. Sixteen percent of the problem gamblers had 'gone for help with my gambling' at some time and, of these people, half had done so during the past six months.

Interpersonal/Family

Problem gamblers indicated more often than non-problem gamblers that, at least sometimes:

- Their gambling had given them something to talk about with family or friends
- They had gone gambling with their friends or family
- Their family or friends had criticised their gambling
- Their gambling had caused arguments about money with family or friends
- When they had lost at gambling they had bragged about winning
- They had hidden signs of their gambling from family or friends
- Their gambling had caused problems for their family or friends

- Their gambling had felt more important than socialising with their family or friends
- They had told lies about their gambling
- Their gambling had caused the breakup of an important relationship.

More detailed information is provided in Table 34. From this table, it is apparent that moderately large numbers of non-problem gamblers also indicated that the first two items listed above applied to them. However, in the case of the remaining items, it is evident that they rarely apply to non-problem gamblers.

Table 34: Interpersonal and Family Benefits and Costs of Gambling by Gambling Participation

	How often did the following apply to you?				
Variable	**Never**	**Rarely**	**Sometimes**	**Often/Always**	**Don't Know/NA**
My gambling has given me something to talk about with family or friends					
Ever					
Problem	24.4% (14)	22.8% (21)	33.9% (28)	17.1% (10)	1.8% (1)
Infrequent	45.0% (40)	19.3% (18)	22.3% (19)	6.2% (5)	7.2% (7)
Regular	31.1% (25)	32.1% (30)	29.2% (30)	6.8% (7)	0.9% (1)
Total	38.6% (79)	24.7% (69)	25.5% (77)	6.8% (22)	4.5% (9)
In the past 6 months					
Problem	62.6% (47)		16.3% (15)	19.3% (11)	1.8% (1)
Infrequent	68.1% (61)		21.2% (18)	3.5% (3)	7.2% (7)
Regular	76.9% (68)		15.1% (17)	7.1% (7)	0.9% (1)
Total	71.5% (176)		18.5% (50)	5.5% (21)	4.5% (9)
I have gone gambling with my friends or family					
Ever					
Problem	14.1% (5)	25.4% (24)	41.1% (30)	17.6% (14)	1.8% (1)
Infrequent	30.4% (28)	21.6% (19)	28.4% (23)	11.0% (11)	8.6% (8)
Regular	28.3% (27)	22.3% (20)	35.4% (33)	13.0% (12)	0.9% (1)
Total	29.0% (60)	22.0% (63)	31.7% (86)	12.1% (37)	5.2% (10)
In the past 6 months					
Problem	59.1% (47)		23.8% (16)	15.4% (10)	1.8% (1)
Infrequent	66.8% (62)		14.2% (12)	10.4% (7)	8.6% (8)
Regular	70.2% (65)		20.9% (19)	8.0% (8)	0.9% (1)
Total	68.0% (174)		17.3% (47)	9.5% (25)	5.2% (10)
My family or friends have criticised my gambling					
Ever					
Problem	42.7% (33)	14.5% (13)	21.7% (16)	19.2% (11)	1.8% (1)
Infrequent	81.6% (75)	5.3% (3)	5.9% (4)	0.0% (0)	7.2% (7)
Regular	92.3% (87)	5.6% (4)	1.2% (1)	0.0% (0)	0.9% (1)
Total	84.8% (195)	5.7% (20)	4.5% (21)	0.6% (11)	4.5% (9)
In the past 6 months					
Problem	72.8% (58)		12.3% (10)	13.1% (5)	1.8% (1)
Infrequent	90.5% (80)		2.3% (2)	0.0% (0)	7.2% (7)
Regular	97.9% (91)		1.2% (1)	0.0% (0)	0.9% (1)
Total	93.0% (229)		2.2% (13)	0.4% (5)	4.5% (9)
My gambling has caused arguments about money with family or friends					
Ever					
Problem	55.4% (45)	13.7% (11)	6.3% (7)	22.8% (10)	1.8% (1)
Infrequent	86.0% (78)	6.3% (3)	0.6% (1)	0.0% (0)	7.2% (7)
Regular	97.1% (91)	2.0% (1)	0.0% (0)	0.0% (0)	0.9% (1)
Total	89.6% (214)	4.7% (15)	0.5% (8)	0.7% (10)	4.5% (9)
In the past 6 months					
Problem	79.5% (64)		2.2% (3)	16.5% (6)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.0% (238)		0.1% (3)	0.5% (6)	4.5% (9)
When I have lost at gambling, I have bragged about winning					
Ever					
Problem	63.6% (53)	13.6% (10)	9.7% (7)	11.3% (3)	1.8% (1)
Infrequent	87.2% (78)	5.0% (3)	0.0% (0)	0.6% (1)	7.2% (7)

Regular	97.9% (91)	1.2% (1)	0.0% (0)	0.0% (0)	0.9% (1)
Total	90.9% (222)	3.7% (14)	0.3% (7)	0.7% (4)	4.5% (9)
In the past 6 months					
Problem	81.7% (67)		5.2% (3)	11.3% (3)	1.8% (1)
Infrequent	92.2% (81)		0.0% (0)	0.6% (1)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	94.7% (240)		0.2% (3)	0.7% (4)	4.5% (9)
I have hidden betting slips, lottery tickets, gambling money, or other signs of my gambling from family or friends					
Ever					
Problem	47.7% (40)	10.4% (9)	26.1% (18)	14.0% (6)	1.8% (1)
Infrequent	88.8% (79)	4.0% (3)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.2% (91)	0.9% (1)	0.0% (0)	0.0% (0)	0.9% (1)
Total	91.4% (210)	2.9% (13)	0.8% (18)	0.4% (6)	4.5% (9)
In the past 6 months					
Problem	74.6% (62)		10.9% (7)	12.7% (4)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	94.8% (236)		0.3% (7)	0.4% (4)	4.5% (9)
My gambling caused problems for my family or friends					
Ever					
Problem	66.1% (53)	4.4% (5)	18.3% (9)	9.4% (6)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	94.5% (227)	0.1% (5)	0.6% (9)	0.3% (6)	4.5% (9)
In the past 6 months					
Problem	80.5% (66)		3.4% (2)	14.3% (5)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.0% (240)		0.1% (2)	0.5% (5)	4.5% (9)
My gambling has felt more important to me than socialising with my family or friends					
Ever					
Problem	58.5% (44)	18.2% (12)	15.1% (13)	6.4% (4)	1.8% (1)
Infrequent	91.7% (81)	1.1% (1)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	96.3% (89)	1.7% (2)	1.2% (1)	0.0% (0)	0.9% (1)
Total	92.6% (214)	1.8% (15)	1.0% (14)	0.2% (4)	4.5% (9)
In the past 6 months					
Problem	87.3% (65)		3.1% (4)	7.8% (4)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.2% (239)		0.1% (4)	0.3% (4)	4.5% (9)
I have told lies about my gambling					
Ever					
Problem	44.8% (34)	20.8% (20)	16.6% (13)	16.1% (6)	1.8% (1)
Infrequent	88.2% (80)	4.6% (2)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	95.9% (89)	2.0% (2)	0.0% (0)	1.2% (1)	0.9% (1)
Total	90.0% (203)	4.0% (24)	0.5% (13)	1.0% (7)	4.5% (9)
In the past 6 months					
Problem	81.2% (67)		5.3% (3)	11.7% (3)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	97.9% (91)		1.2% (1)	0.0% (0)	0.9% (1)
Total	94.5% (240)		0.7% (4)	0.4% (3)	4.5% (9)
My gambling caused the breakup of an important relationship					
Ever					
Problem	87.0% (68)	1.2% (1)	3.0% (3)	7.0% (1)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	95.2% (242)	0.0% (1)	0.1% (3)	0.2% (1)	4.5% (9)
In the past 6 months					
Problem	91.2% (72)		0.0% (0)	7.0% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.3% (246)		0.0% (0)	0.2% (1)	4.5% (9)

Vocation/Employment

From Table 35 it can be seen that only very small percentages of people who have ever gambled were estimated to have often or always experienced any of the work-related

gambling benefits and costs listed. During the past six months 16 percent, at least sometimes, indicated that 'gambling is something we all talk about at work'. During this same period seven percent were estimated to have at least sometimes gone gambling with people from work and two percent indicated that 'thinking about gambling has helped get me through a boring job'. Other benefits and costs during the past six months were estimated to apply to less than two percent of people.

Table 35: Vocation/Employment Benefits and Costs of Gambling Participation

	How often did the following apply to you?				
Variable	**Never**	**Rarely**	**Sometimes**	**Often/Always**	**Don't Know/NA**
Thinking about gambling has helped me get through a boring job					
Ever					
Problem	70.1% (52)	11.6% (9)	14.0% (9)	2.5% (3)	1.8% (1)
Infrequent	83.5% (77)	5.0% (2)	3.7% (2)	0.6% (1)	7.2% (7)
Regular	85.7% (80)	7.8% (6)	5.6% (6)	0.0% (0)	0.9% (1)
Total	84.0% (209)	6.4% (17)	4.8% (17)	0.4% (4)	4.5% (9)
In the past 6 months					
Problem	87.7% (65)		8.0% (5)	2.5% (3)	1.8% (1)
Infrequent	92.2% (81)		0.0% (0)	0.6% (1)	7.2% (7)
Regular	95.6% (89)		3.5% (3)	0.0% (0)	0.9% (1)
Total	93.5% (235)		1.7% (8)	0.4% (4)	4.5% (9)
I have lost time from work/study due to gambling					
Ever					
Problem	68.4% (51)	18.1% (12)	8.4% (7)	3.4% (3)	1.8% (1)
Infrequent	89.1% (80)	2.5% (1)	1.2% (1)	0.0% (0)	7.2% (7)
Regular	97.2% (90)	0.8% (1)	1.0% (1)	0.0% (0)	0.9% (1)
Total	91.8% (221)	2.3% (14)	1.4% (9)	0.1% (3)	4.5% (9)
In the past 6 months					
Problem	92.3% (69)		4.4% (3)	1.5% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		1.0% (1)	0.0% (0)	0.9% (1)
Total	94.9% (242)		0.6% (4)	0.1% (1)	4.5% (9)
Thinking about my gambling has stopped me working efficiently at my job					
Ever					
Problem	75.5% (59)	7.9% (6)	7.8% (7)	7.0% (1)	1.8% (1)
Infrequent	91.6% (81)	1.2% (1)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.2% (91)	0.8% (1)	0.0% (0)	0.0% (0)	0.9% (1)
Total	93.8% (231)	1.3% (8)	0.3% (7)	0.2% (1)	4.5% (9)
In the past 6 months					
Problem	94.3% (70)		0.7% (2)	3.2% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.4% (244)		0.0% (2)	0.1% (1)	4.5% (9)
I have moved/changed jobs because of problems over my gambling					
Ever					
Problem	83.7% (68)	6.4% (3)	8.1% (2)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	95.1% (242)	0.2% (3)	0.3% (2)	0.0% (0)	4.5% (9)
In the past 6 months					
Problem	91.2% (72)		7.0% (1)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.3% (246)		0.2% (1)	0.0% (0)	4.5% (9)
Gambling is something we all talk about at work					
Ever					
Problem	30.7% (26)	37.0% (26)	16.8% (15)	13.6% (6)	1.8% (1)
Infrequent	55.4% (49)	19.3% (17)	16.5% (14)	1.0% (1)	7.8% (8)
Regular	52.1% (44)	17.3% (18)	28.3% (28)	1.4% (2)	0.9% (1)
Total	53.3% (119)	19.0% (61)	21.4% (57)	1.5% (9)	4.8% (10)
In the past 6 months					
Problem	71.5% (57)		12.5% (11)	14.2% (5)	1.8% (1)
Infrequent	80.1% (72)		11.0% (8)	1.1% (1)	7.8% (8)

Regular	79.3% (74)		13.2% (13)	6.6% (5)	0.9% (1)
Total	79.5% (203)		12.0% (32)	3.8% (11)	4.8% (10)
I have gone gambling with people from work					
Ever					
Problem	37.9% (32)	30.6% (20)	20.2% (18)	9.6% (3)	1.8% (1)
Infrequent	72.3% (65)	9.0% (8)	5.1% (5)	5.8% (3)	7.8% (8)
Regular	61.4% (58)	28.7% (26)	5.1% (6)	3.9% (2)	0.9% (1)
Total	66.7% (155)	17.8% (54)	5.5% (29)	5.2% (8)	4.8% (10)
In the past 6 months					
Problem	77.8% (60)		12.3% (11)	8.1% (2)	1.8% (1)
Infrequent	85.5% (77)		2.0% (2)	4.7% (2)	7.8% (8)
Regular	93.0% (88)		1.1% (2)	5.0% (2)	0.9% (1)
Total	88.4% (225)		1.9% (15)	5.0% (6)	4.8% (10)
I have been sacked from my job because of my gambling					
Ever					
Problem	91.2% (72)	0.0% (0)	0.0% (0)	7.0% (1)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	95.3% (246)	0.0% (0)	0.0% (0)	0.2% (1)	4.5% (9)
In the past 6 months					
Problem	91.2% (72)		7.0% (1)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.3% (246)		0.2% (1)	0.0% (0)	4.5% (9)
Being a person who gambles has helped me get on at work					
Ever					
Problem	79.9% (62)	11.0% (6)	7.3% (5)	0.0% (0)	1.8% (1)
Infrequent	82.8% (77)	7.5% (4)	2.5% (1)	0.0% (0)	7.2% (7)
Regular	94.0% (87)	3.4% (3)	1.7% (2)	0.0% (0)	0.9% (1)
Total	87.3% (226)	5.9% (13)	2.3% (8)	0.0% (0)	4.5% (9)
In the past 6 months					
Problem	92.6% (70)		3.1% (2)	2.5% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.2% (91)		0.8% (1)	0.0% (0)	0.9% (1)
Total	95.0% (243)		0.4% (3)	0.1% (1)	4.5% (9)

Although positive and negative aspects of gambling in relation to work were relatively infrequently mentioned, more problem gamblers than non-problem gamblers indicated at least sometimes that:

- Thinking about gambling had helped them get through a boring job
- They had lost time from work or study due to gambling
- Thinking about gambling had stopped them from working efficiently at their job
- They had moved or changed jobs due to gambling
- They had gone gambling with people from work
- They had been sacked from a job because of gambling
- Being a person who gambles has helped them get on at work.

Both problem gamblers and regular gamblers also somewhat more often than infrequent gamblers indicated that 'gambling is something we all talk about at work'. In contrast to regular gamblers, this was more often or always the case for problem gamblers.

Financial

It was estimated that nearly a quarter of people who have gambled considered that winning at gambling had helped them financially. However, for most of these people this was rarely the case. Twelve percent were estimated to have won NZ$1,000 or more on a single occasion. For two-thirds of these this had happened only rarely. Over a quarter

(28%) indicated that they had won more than they had lost gambling. Again, however, a much smaller number (3%) had this experience often or always. Although nine percent were estimated to have spent more than they could afford on gambling, for less than one percent was this often or always the case and, for only one percent had this occurred sometimes or more often during the past six months.

Table 36: Financial Benefits and Costs of Gambling by Gambling Participation

Variable	How often did the following apply to you? Never	Rarely	Sometimes	Often/Always	Don't Know/NA
Winning at gambling has helped me financially					
Ever					
Problem	37.7% (31)	18.2% (16)	33.6% (22)	8.8% (4)	1.8% (1)
Infrequent	74.4% (70)	14.2% (10)	3.6% (1)	0.6% (1)	7.2% (7)
Regular	74.3% (71)	12.2% (11)	12.6% (10)	0.0% (0)	0.9% (1)
Total	73.2% (172)	13.5% (37)	8.3% (33)	0.6% (5)	4.5% (9)
In the past 6 months					
Problem	74.8% (63)		13.2% (8)	10.2% (2)	1.8% (1)
Infrequent	92.2% (81)		0.0% (0)	0.6% (1)	7.2% (7)
Regular	91.4% (87)		7.7% (5)	0.0% (0)	0.9% (1)
Total	91.3% (231)		3.6% (13)	0.7% (3)	4.5% (9)
Family or friends have had to pay my debts from gambling					
Ever					
Problem	72.0% (60)	5.7% (5)	18.3% (6)	2.2% (2)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	94.7% (234)	0.2% (5)	0.6% (6)	0.1% (2)	4.5% (9)
In the past 6 months					
Problem	84.1% (69)		7.0% (3)	7.0% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.1% (243)		0.2% (3)	0.2% (1)	4.5% (9)
I have borrowed money and not paid it back because of my gambling					
Ever					
Problem	93.5% (69)	2.5% (2)	1.0% (1)	1.1% (1)	1.8% (1)
Infrequent	92.2% (81)	0.6% (1)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	95.1% (242)	0.4% (3)	0.0% (1)	0.0% (1)	4.5% (9)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.6% (247)		0.0% (0)	0.0% (0)	4.5% (9)
I have spent more than I could afford on my gambling					
Ever					
Problem	35.4% (30)	17.4% (15)	31.4% (21)	14.0% (7)	1.8% (1)
Infrequent	85.1% (76)	4.0% (4)	3.8% (2)	0.0% (0)	7.2% (7)
Regular	91.4% (85)	4.8% (5)	2.9% (2)	0.0% (0)	0.9% (1)
Total	86.1% (191)	4.7% (24)	4.3% (25)	0.4% (7)	4.5% (9)
In the past 6 months					
Problem	74.7% (60)		12.1% (7)	11.4% (6)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	97.9% (91)		1.2% (1)	0.0% (0)	0.9% (1)
Total	94.3% (233)		0.9% (8)	0.4% (6)	4.5% (9)
I won more than I have lost at gambling					
Ever					
Problem	49.4% (39)	13.7% (12)	33.5% (20)	1.5% (2)	1.8% (1)
Infrequent	67.1% (60)	13.9% (12)	8.2% (8)	3.7% (2)	7.2% (7)
Regular	70.7% (66)	12.4% (13)	14.6% (12)	1.4% (1)	0.9% (1)
Total	68.0% (165)	13.3% (37)	11.6% (40)	2.7% (5)	4.5% (9)
In the past 6 months					
Problem	79.3% (62)		17.3% (9)	1.6% (2)	1.8% (1)
Infrequent	87.3% (78)		1.8% (2)	3.7% (2)	7.2% (7)

Regular	90.1% (86)		8.0% (5)	1.0% (1)	0.9% (1)
Total	88.2% (226)		4.8% (16)	2.5% (5)	4.5% (9)
I have had a big win ($1,000+) from gambling					
Ever					
Problem	54.9% (44)	24.4% (13)	15.0% (12)	3.9% (4)	1.8% (1)
Infrequent	86.6% (76)	5.1% (5)	1.1% (1)	0.0% (0)	7.2% (7)
Regular	82.2% (78)	9.7% (8)	4.2% (3)	3.0% (3)	0.9% (1)
Total	83.8% (198)	7.6% (26)	2.8% (16)	1.4% (7)	4.5% (9)
In the past 6 months					
Problem	91.2% (67)		5.9% (4)	1.0% (2)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	96.3% (90)		2.0% (1)	0.8% (1)	0.9% (1)
Total	94.2% (239)		1.0% (5)	0.4% (3)	4.5% (9)
I have gambled to try and win money to pay off debts					
Ever					
Problem	56.0% (45)	9.3% (8)	22.0% (16)	10.9% (4)	1.8% (1)
Infrequent	88.7% (78)	2.6% (2)	1.5% (2)	0.0% (0)	7.2% (7)
Regular	96.1% (89)	2.5% (2)	0.5% (1)	0.0% (0)	0.9% (1)
Total	90.7% (212)	2.8% (12)	1.8% (19)	0.3% (4)	4.5% (9)
In the past 6 months					
Problem	78.1% (62)		9.3% (7)	10.8% (4)	1.8% (1)
Infrequent	91.2% (80)		1.5% (2)	0.0% (0)	7.2% (7)
Regular	98.6% (91)		0.5% (1)	0.0% (0)	0.9% (1)
Total	93.9% (233)		1.4% (10)	0.3% (4)	4.5% (9)
I have borrowed money to gamble or to pay gambling debts					
Ever					
Problem	68.5% (55)	19.6% (10)	7.9% (6)	2.2% (2)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)	0.0% (0)	0.0% (0)	0.0% (0)	0.9% (1)
Total	94.6% (229)	0.6% (10)	0.3% (6)	0.1% (2)	4.5% (9)
In the past 6 months					
Problem	95.6% (71)		2.6% (2)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	99.1% (92)		0.0% (0)	0.0% (0)	0.9% (1)
Total	95.5% (245)		0.1% (2)	0.0% (0)	4.5% (9)

The remaining items in this group of questions applied to only a very small percentage of people.

As with the previous groupings of questions, differences were evident between problem and non-problem gamblers (refer to Table 36). The following, at least sometimes, more often applied to problem gamblers:

- Winning at gambling had helped them financially
- Friends or family have had to pay their gambling debts
- They had lost more than they could afford gambling
- They had won more than they had lost gambling
- They had a big win (NZ$1,000+) from gambling
- They had gambled to try to win money to pay off debts
- They had borrowed money to gamble or to pay gambling debts.

Only a few problem gamblers (5%) acknowledged that they had ever borrowed money but not paid it back because of their gambling. It was estimated that approximately a half of problem gamblers had at some time won more than they had lost gambling compared to just over a quarter of non-problem gamblers. However, only two percent of problem gamblers indicated that this was often or always the case, a similar percentage to that estimated for non-problem gamblers.

Legal

The questions in this section refer to costs and legal consequences of gambling. There are no questions relating explicitly to benefits. Responses to each question by gambling participation status are given in Table 37.

From Table 37 it can be seen that the large majority of respondents reported no legal difficulties as a result of gambling. Only one item was estimated to apply to more than one percent of people, namely having ever borrowed money without permission or authority to gamble. It was estimated that 14 percent of problem gamblers had done this at some time. However, for most of these people this was a rare occurrence. Three percent of infrequent gamblers had also done this rarely.

Eight percent of problem gamblers were estimated to have thought about doing something illegal to get money for gambling or to pay gambling debts. No non-problem gamblers reported this. Only one problem gambler and one non-problem gambler acknowledged that their gambling had ever led to problems with the police. This latter person also reported having appeared in court on charges related to gambling. None of the other respondents indicated that they had appeared in court on charges of this type or had been in prison on charges related to their gambling.

Table 37: Legal Aspects of Gambling by Gambling Participation

	How often did the following apply to you?				
Variable	**Never**	**Rarely**	**Sometimes**	**Often/Always**	**Don't Know/NA**
I have thought about doing something illegal to get money for gambling or gambling debts					
Ever					
Problem	90.3% (68)	4.2% (2)	2.6% (2)	1.1% (1)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)	0.0% (0)	0.0% (0)	0.0% (0)	1.9% (2)
Total	94.9% (241)	0.1% (2)	0.1% (2)	0.0% (1)	4.9% (10)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)		0.0% (0)	0.0% (0)	4.9% (10)
I have borrowed money without permission or authority so I could gamble					
Ever					
Problem	84.4% (63)	10.6% (7)	2.2% (2)	1.1% (1)	1.8% (1)
Infrequent	90.3% (81)	2.5% (1)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)	0.0% (0)	0.0% (0)	0.0% (0)	1.9% (2)
Total	93.3% (235)	1.7% (8)	0.1% (2)	0.0% (1)	4.9% (10)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)		0.0% (0)	0.0% (0)	4.9% (10)
My gambling has led me to problems with the police					
Ever					
Problem	97.1% (72)	0.0% (0)	1.1% (1)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	97.0% (90)	1.1% (1)	0.0% (0)	0.0% (0)	1.9% (2)
Total	94.7% (244)	0.5% (1)	0.0% (1)	0.0% (0)	4.9% (10)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)		0.0% (0)	0.0% (0)	4.9% (10)
I have appeared in court on charges related to my gambling					
Ever					

Problem	98.2% (73)	0.0% (0)	0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	97.0% (90)	0.0% (0)	1.1% (1)	0.0% (0)	1.9% (2)
Total	94.7% (245)	0.0% (0)	0.5% (1)	0.0% (0)	4.9% (10)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)		0.0% (0)	0.0% (0)	4.9% (10)
I have been in prison because of crimes related to my gambling					
Ever					
Problem	98.2% (73)	0.0% (0)	0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)	0.0% (0)	0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)	0.0% (0)	0.0% (0)	0.0% (0)	4.9% (10)
In the past 6 months					
Problem	98.2% (73)		0.0% (0)	0.0% (0)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	98.1% (91)		0.0% (0)	0.0% (0)	1.9% (2)
Total	95.2% (246)		0.0% (0)	0.0% (0)	4.9% (10)

Gambling Characteristics

Table 38 provides information on a variety of aspects of gambling participation and gambling-related experiences, some of which previous research has shown to differentiate problem from non-problem gamblers.

From Table 38 it is evident that approximately a half of people who gamble were estimated to have ever felt that each time they gamble they expected to win. However, just under one in five, indicate often or always expecting to win when they start gambling. A quarter of people indicate that their gambling has ever been skilful. Approximately two-thirds indicate that they have at some time felt excited while they were gambling and for one in five this is often or always the case. Somewhat similar percentages are evident for feeling relaxed while gambling. Approximately a third had at some time been more likely to gamble if they had had some luck and wanted to celebrate. However, few people (2%) indicated that this was often or always the case.

As with the previous groupings of questions, the most notable differences between the three gambling participation categories involve the problem gamblers versus the non-problem gamblers. From Table 38 it is evident that for problem gamblers the following more often apply to them:

- After losing at gambling they go back another day to win back money
- Expect to win each time they start gambling
- Consider their gambling to be skilful
- Spent longer gambling than planned
- Felt like stopping gambling but didn't think they could
- Felt excited while gambling
- Gamble when they have had a disappointing or frustrating day
- Gamble longer when losing and had urgent debts
- Are more likely to gamble if they had had some luck and wanted to celebrate
- Are more likely to go on gambling when they had lost more money than planned, if they were excited.

Table 38: Gambling Characteristics by Gambling Participation

Variable	How often did the following apply to you? Never	Rarely	Sometimes	Often/Always	Don't Know/NA
After losing at gambling I have gone back another day to win back my money					
Ever					
Problem	41.4% (27)	18.9% (14)	26.2% (22)	11.7% (10)	1.8% (1)
Infrequent	83.4% (76)	2.4% (2)	6.9% (4)	0.0% (0)	7.2% (7)
Regular	81.3% (78)	10.5% (6)	2.3% (3)	3.3% (3)	2.6% (3)
Total	81.2% (181)	6.3% (22)	5.6% (29)	1.7% (13)	5.1% (11)
In the past 6 months					
Problem	82.4% (59)		9.1% (8)	6.7% (6)	1.8% (1)
Infrequent	85.9% (78)		5.1% (3)	1.8% (1)	7.2% (7)
Regular	92.9% (86)		2.4% (2)	2.1% (2)	2.6% (3)
Total	88.7% (223)		4.1% (13)	2.1% (9)	5.1% (11)
Each time I started gambling I expected to win					
Ever					
Problem	13.4% (11)	7.6% (6)	42.0% (26)	35.3% (30)	1.8% (1)
Infrequent	50.9% (46)	13.4% (12)	16.8% (12)	10.6% (11)	8.3% (8)
Regular	47.1% (42)	15.4% (13)	10.8% (14)	24.2% (21)	2.6% (3)
Total	48.2% (99)	14.0% (31)	15.1% (52)	17.0% (62)	5.7% (12)
In the past 6 months					
Problem	40.6% (35)		31.9% (20)	25.6% (18)	1.8% (1)
Infrequent	76.1% (65)		9.0% (9)	6.7% (7)	8.3% (8)
Regular	67.8% (61)		6.1% (8)	23.6% (21)	2.6% (3)
Total	71.5% (161)		8.5% (37)	14.2% (46)	5.7% (12)
My gambling has been skilful					
Ever					
Problem	32.3% (25)	17.4% (15)	42.7% (27)	5.8% (6)	1.8% (1)
Infrequent	70.6% (65)	13.3% (11)	2.9% (2)	6.0% (4)	7.2% (7)
Regular	70.1% (66)	13.5% (11)	10.4% (10)	3.5% (3)	2.6% (3)
Total	69.2% (156)	13.5% (37)	7.2% (39)	5.0% (13)	5.1% (11)
In the past 6 months					
Problem	65.7% (53)		28.8% (15)	3.7% 5)	1.8% (1)
Infrequent	86.7% (78)		4.9% (3)	1.2% (1)	7.2% (7)
Regular	86.5% (81)		8.3% (7)	2.6% (2)	2.6% (3)
Total	86.0% (212)		7.1% (25)	1.8% (8)	5.1% (11)
When I have gambled I have gone on for longer than I planned					
Ever					
Problem	15.5% (11)	13.6% (13)	46.1% (33)	22.9% (16)	1.8% (1)
Infrequent	77.4% (69)	13.5% (11)	0.7% (1)	1.3% (1)	7.2% (7)
Regular	73.4% (70)	14.3% (12)	5.6% (6)	1.2% (1)	5.5% (4)
Total	73.8% (150)	13.9% (36)	4.1% (40)	1.9% (18)	6.3% (12)
In the past 6 months					
Problem	49.9% (41)		42.6% (27)	5.7% (5)	1.8% (1)
Infrequent	91.5% (81)		1.3% (1)	0.0% (0)	7.2% (7)
Regular	91.5% (86)		1.8% (2)	1.2% (1)	5.5% (4)
Total	90.2% (208)		2.8% (30)	0.7% (6)	6.3% (12)
I have felt like stopping gambling but didn't think I could					
Ever					
Problem	44.8% (37)	12.0% (9)	19.9% (16)	20.6% (10)	2.8% (2)
Infrequent	89.2% (79)	2.1% (1)	0.6% (1)	1.0% (1)	7.2% (7)
Regular	94.5% (86)	1.8% (3)	0.0% (0)	1.2% (1)	2.6% (3)
Total	90.0% (202)	2.3% (13)	1.0% (17)	1.7% (12)	5.2% (12)
In the past 6 months					
Problem	68.8% (57)		10.2% (8)	18.2% (7)	2.8% (2)
Infrequent	91.2% (80)		0.6% (1)	1.0% (1)	7.2% (7)
Regular	96.3% (89)		0.0% (0)	1.2% (1)	2.6% (3)
Total	92.6% (229)		0.7% (9)	1.6% (9)	5.2% (12)
When I was gambling I felt excited					
Ever					
Problem	8.6% (4)	6.0% (5)	41.1% (29)	42.6% (35)	1.8% (1)
Infrequent	36.3% (35)	12.8% (11)	26.4% (21)	17.4% (15)	7.2% (7)
Regular	25.8% (26)	11.3% (11)	39.6% (35)	20.8% (18)	2.6% (3)
Total	31.1% (65)	12.0% (27)	32.3% (85)	19.5% (68)	5.1% (11)

In the past 6 months					
Problem	29.8% (22)		38.0% (25)	29.5% (25)	2.8% (2)
Infrequent	61.8% (56)		16.3% (14)	14.7% (12)	7.2% (7)
Regular	61.5% (58)		22.2% (22)	13.7% (10)	2.6% (3)
Total	60.6% (136)		19.4% (61)	14.8% (47)	5.2% (12)
When I was gambling I felt relaxed					
Ever					
Problem	16.0% (11)	9.7% (10)	39.1% (27)	33.4% (25)	1.8% (1)
Infrequent	29.7% (27)	8.0% (9)	26.2% (22)	28.8% (24)	7.2% (7)
Regular	29.7% (31)	9.3% (9)	30.2% (26)	28.3% (24)	2.6% (3)
Total	29.3% (69)	8.6% (28)	28.3% (75)	28.8% (73)	5.1% (11)
In the past 6 months					
Problem	41.2% (33)		32.3% (26)	24.7% (14)	1.8% (1)
Infrequent	52.5% (49)		21.3% (19)	19.0% (14)	7.2% (7)
Regular	51.8% (51)		19.9% (18)	25.7% (21)	2.6% (3)
Total	51.9% (133)		21.1% (63)	22.0% (49)	5.1% (11)
When I have had a disappointing or frustrating day I was more likely to go and gamble					
Ever					
Problem	49.6% (39)	13.6% (12)	24.9% (15)	10.1% (7)	1.8% (1)
Infrequent	81.6% (75)	8.0% (5)	2.5% (1)	0.6% (1)	7.2% (7)
Regular	91.0% (83)	5.2% (5)	1.2% (2)	0.0% (0)	2.6% (3)
Total	84.5% (197)	7.1% (22)	2.7% (18)	0.6% (8)	5.1% (11)
In the past 6 months					
Problem	75.4% (61)		14.1% (9)	8.8% (3)	1.8% (1)
Infrequent	90.0% (80)		2.5% (1)	0.6% (1)	7.2% (7)
Regular	97.4% (90)		0.0% (0)	0.0% (0)	2.6% (3)
Total	92.4% (231)		1.9% (10)	0.6% (4)	5.1% (11)
When I was losing and had urgent debts, I could go on gambling longer					
Ever					
Problem	55.6% (45)	11.7% (12)	28.3% (14)	2.6% (2)	1.8% (1)
Infrequent	92.8% (82)	0.0% (0)	0.0% (0)	0.0% (0)	7.2% (7)
Regular	96.1% (89)	1.4% (1)	0.0% (0)	0.0% (0)	2.6% (3)
Total	93.0% (216)	0.9% (13)	0.9% (14)	0.1% (2)	5.1% (11)
In the past 6 months					
Problem	75.5% (65)		18.7% (8)	4.0% (2)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	97.4% (90)		0.0% (0)	0.0% (0)	2.6% (3)
Total	94.2% (235)		0.6% (8)	0.1% (2)	5.1% (11)
I was more likely to go and gamble if I'd had some luck and I wanted to celebrate					
Ever					
Problem	24.6% (19)	11.3% (12)	48.9% (32)	13.4% (10)	1.8% (1)
Infrequent	63.2% (61)	7.4% (6)	19.2% (13)	3.0% (2)	7.2% (7)
Regular	63.3% (60)	17.4% (16)	15.9% (13)	0.8% (1)	2.6% (3)
Total	62.0% (140)	11.7% (34)	18.8% (58)	2.4% (13)	5.1% (11
In the past 6 months					
Problem	57.8% (49)		37.0% (21)	3.3% (3)	1.8% (1)
Infrequent	79.0% (74)		10.8% (6)	3.0% (2)	7.2% (7)
Regular	91.7% (85)		5.2% (4)	0.6% (1)	2.6% (3)
Total	83.5% (208)		9.3% (31)	2.0% (6)	5.1% (11)
When I had lost more money than I had planned, I was more likely to go on gambling if I was excited					
Ever					
Problem	39.6% (32	23.0% (19)	18.9% (13)	16.8% (9)	1.8% (1)
Infrequent	85.1% (76	4.5% (4)	3.2% (2)	0.0% (0)	7.2% (7)
Regular	89.5% (83	6.9% (5)	0.4% (1)	0.6% (1)	2.6% (3)
Total	85.5% (19	6.1% (28)	2.5% (16)	0.8% (10)	5.1% (11)
In the past 6 months					
Problem	75.5% (62)		20.2% (10)	2.5% (1)	1.8% (1)
Infrequent	92.8% (82)		0.0% (0)	0.0% (0)	7.2% (7)
Regular	96.8% (89)		0.0% (0)	0.6% (1)	2.6% (3)
Total	93.9% (233)		0.6% (10)	0.3% (2)	5.1% (11)

3.5 Gambling and Health

All participants were asked how happy they had been during the past six months with their lives generally. In Table 39, happiness ratings are examined in relation to current favourite form of gambling, gambling status, gender, age and ethnicity. Overall, just over two-thirds of people were estimated to be currently very happy with their life generally. Almost a quarter (24%) were somewhat happy, seven percent somewhat unhappy and less than one percent were very unhappy.

Table 39: Happiness Ratings by Favourite Form of Gambling, Gambling Status, Gender, Age and Ethnicity

Variable	Very happy	Somewhat happy	Somewhat unhappy	Very unhappy
Gambling status				
Problem	57.4% (38)	38.2% (32)	4.5% (4)	0.0% (0)
Infrequent	63.9% (56)	25.9% (25)	9.5% (7)	0.7% (1)
Regular	75.3% (67)	21.2% (22)	3.5% (4)	0.0% (0)
Sex				
Male	67.9% (72)	20.8% (39)	11.4% (9)	0.0% (0)
Female	68.8% (89)	26.9% (40)	3.6% (6)	0.6% (1)
Age group				
Less than 35 years	70.0% (39)	20.8% (24)	9.2% (5)	0.0% (0)
35 years or over	67.8% (122)	25.8% (55)	6.0% (10)	0.5% (1)
Ethnicity				
European	65.9% (138)	25.7% (71)	8.0% (15)	0.4% (1)
NZ Māori	88.2% (13)	11.8% (6)	0.0% (0)	0.0% (0)
Other ethnic group	75.9% (10)	24.2% (2)	0.0% (0)	0.0% (0)
Favourite gambling activity				
Lotto	72.9% (77)	19.6% (25)	6.8% (7)	0.7% (1)
Instant Kiwi	51.8% (7)	48.2% (7)	0.0% (0)	0.0% (0)
Other lotteries/raffles	63.6% (12)	18.2% (4)	18.2% (4)	0.0% (0)
Non-casino gaming machines	69.8% (14)	30.2% (9)	0.0% (0)	0.0% (0)
Betting on horse and dog races	56.9% (18)	28.4% (12)	14.7% (2)	0.0% (0)
Card games played for money	88.6% (6)	10.1% (2)	1.4% (1)	0.0% (0)
Other gambling activities	65.5% (16)	34.5% (11)	0.0% (0)	0.0% (0)
No preference	66.5% (11)	28.7% (9)	4.9% (1)	0.0% (0)
Total	68.4% (161)	24.4% (79)	6.9% (15)	0.4% (1)

Three-quarters of regular gamblers were estimated to be very happy, compared to just under two-thirds (64%) of the infrequent gamblers and somewhat less (57%) of the problem gamblers. More than twice as many of the infrequent gamblers (10%) than problem gamblers (5%) and regular gamblers (4%) were somewhat or very unhappy.

Participants also provided, as a part of the GHQ-12, ratings of their general health and frequency of medical consultations during the past 12 weeks. This information is provided in Table 40 in relation to the same variables that are included in Table 39.

Seventy-six percent of people rated their health overall as being good. Twenty-three percent rated it as fair and one percent as poor.

Perhaps surprisingly, problem gamblers more often rated their health as good (89%) than regular (78%) and infrequent (73%) gamblers. Problem gamblers rated their health as fair or poor less than half as often as people without gambling problems did.

Table 40 includes information regarding the number of visits made to a doctor during the past 12 weeks. Based on respondent reports, 60 percent of people were estimated to have visited a doctor once or more often. Over a third (37%) had one visit, 11 percent two visits, five percent three visits and seven percent four or more visits. Just over two-thirds of regular gamblers had visited a doctor at least once during the preceding 12 weeks. Somewhat more than a half of both problem and infrequent gamblers mentioned likewise.

Table 40: Self-Rated Health and Number of Visits to Doctor by Gambling Status, Gender, Age, Ethnicity and Favourite Gambling Activity

	Self Rated Health		
Variable	**Good**	**Fair**	**Poor**
Gambling status			
Problem	89.1% (64)	10.9% (10)	0.0% (0)
Infrequent	73.4% (65)	24.9% (22)	1.7% (2)
Regular	77.9% (74)	20.9% (18)	1.2% (1)
Sex			
Male	67.8% (90)	28.8% (27)	3.4% (3)
Female	81.5% (113	18.5% (23)	0.0% (0)
Age group			
Less than 35 years	74.6% (53)	25.5% (15)	0.0% (0)
35 years or over	76.3% (150	21.8% (35)	2.0% (3)
Ethnicity			
European	76.5% (177	21.8% (45)	1.7% (3)
NZ Māori	72.3% (16)	27.7% (3)	0.0% (0)
Other ethnic group	70.0% (10)	30.0% (2)	0.0% (0)
Favourite gambling activity			
Lotto	78.2% (88)	19.9% (20)	2.0% (2)
Instant Kiwi	66.6% (10)	33.4% (4)	0.0% (0)
Other lotteries/raffles	63.9% (14)	36.1% (6)	0.0% (0)
Non-casino gaming machines	60.5% (17)	32.1% (5)	7.5% (1)
Betting on horse and dog races	75.0% (26)	25.0% (6)	0.0% (0)
Card games played for money	97.3% (8)	2.7% (1)	0.0% (0)
Other gambling activities	81.1% (22)	18.9% (5)	0.0% (0)
No preference	80.3% (18)	19.7% (3)	0.0% (0)
Total	75.8% (203	22.8% (50)	1.4% (3)

	Number of Visits to a doctor in last 12 weeks				
Variable	**Zero**	**One**	**Two**	**Three**	**Four or more**
Gambling status					
Problem	46.5% (37)	38.2% (21)	2.6% (3)	5.7% (5)	7.0% (8)
Infrequent	45.4% (36)	32.6% (31)	12.0% (12)	3.8% (5)	6.3% (5)
Regular	32.2% (33)	42.2% (37)	11.1% (8)	7.5% (8)	7.0% (7)
Sex					
Male	39.0% (53)	34.0% (38)	9.5% (8)	7.4% (11)	10.0% (10)
Female	40.6% (53)	38.7% (51)	12.6% (15)	3.9% (7)	4.2% (10)
Age group					
Less than 35 years	53.2% (32)	28.2% (22)	8.9% (5)	2.6% (4)	7.1% (5)
35 years or over	34.7% (74)	40.1% (67)	12.3% (18)	6.5% (14)	6.4% (15)
Ethnicity					
European	40.7% (92)	33.7% (76)	11.8% (21)	6.2% (17)	7.7% (19)
NZ Māori	22.1% (8)	65.7% (8)	11.0% (1)	0.7% (1)	0.5% (1)
Other ethnic group	56.8% (6)	37.6% (5)	5.7% (1)	0.0% (0)	0.0% (0)
Favourite gambling activity					
Lotto	34.8% (39)	45.4% (49)	11.4% (13)	2.4% (3)	6.0% (6)
Instant Kiwi	51.7% (7)	25.2% (3)	18.5% (2)	4.2% (1)	0.4% (1)
Other lotteries/raffles	55.5% (9)	15.2% (3)	6.2% (1)	20.6% (5)	2.5% (2)
Non-casino gaming machines	32.4% (7)	34.8% (11)	6.8% (1)	1.2% (1)	24.8% (3)
Betting on horse and dog races	44.5% (17)	21.8% (6)	14.0% (2)	10.9% (4)	8.8% (3)
Card games played for money	30.2% (2)	33.4% (3)	28.3% (2)	0.0% (0)	8.1% (2)
Other gambling activities	52.1% (14)	26.9% (8)	8.1% (1)	0.2% (1)	12.6% (3)
No preference	35.6% (11)	42.8% (6)	8.3% (1)	13.3% (3)	0.0% (0)
Total	40.0% (106)	36.7% (89)	11.3% (23)	5.4% (18)	6.6% (20)

In Table 41 GHQ-12 defined non-psychotic mental disorder caseness is examined in relation to favourite form of gambling, gambling status, gender, age and ethnicity.

Table 41: Non-psychotic Mental Disorder by Favourite Form of Gambling, Gambling Status, Gender, Age and Ethnicity

Variable		Case	Not a case
Gambling status			
	Problem	19.3% (16)	80.7% (58)
	Infrequent	19.3% (16)	80.7% (73)
	Regular	15.8% (12)	84.2% (81)
Sex			
	Male	18.9% (24)	81.1% (96)
	Female	17.1% (20)	82.9% (116)
Age group			
	Less than 35 years	15.6% (14)	84.4% (54)
	35 years or over	18.8% (30)	81.2% (158)
Ethnicity			
	European	17.8% (39)	82.2% (186)
	NZ Māori	29.2% (4)	70.8% (15)
	Other ethnic group	1.7% (1)	98.3% (11)
Favourite gambling activity			
	Lotto	16.6% (15)	83.4% (95)
	Instant Kiwi	20.2% (2)	79.8% (12)
	Other lotteries/raffles	15.1% (3)	84.9% (17)
	Non-casino gaming machines	18.9% (5)	81.2% (18)
	Betting on horse and dog races	29.6% (7)	70.4% (25)
	Card games played for money	32.6% (4)	67.4% (5)
	Other gambling activities	0.5% (1)	99.5% (20)
	No preference	24.7% (7)	75.3% (20)
Total		17.9% (44)	82.1% (212)

Eighteen percent of people are identified on the basis of the GHQ-12 scores as experiencing clinically significant levels of non-psychotic psychological disturbance.

Marked differences in the prevalence of psychological disorder are apparent across the gambling preference groups. People who expressed a preference for playing card games for money (33%) or betting on horse or dog races (30%) have the highest prevalence, followed by people with no preference (25%), Instant Kiwi (20%) and non-casino gaming machines (19%).

Table 42 examines number of drinks per typical drinking day, frequency of alcohol consumption, AUDIT caseness, and past 12 months cigarette, marijuana and other illicit substance use by the same set of variables that was considered in Tables 39, 40 and 41.

Table 42: Alcohol Consumption, Hazardous Drinking and Other Forms of Substance Use by Favourite Form of Gambling, Gambling Status, Gender, Age and Ethnicity

Variable	Number of drinks on typical drinking day					
	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	No reply
Gambling status						
Problem	32.2% (26)	28.5% (18)	6.5% (5)	9.5% (7)	15.4% (7)	7.9% (5)
Infrequent	46.8% (38)	25.9% (20)	8.3% (7)	6.6% (4)	2.9% (2)	9.5% (8)
Regular	51.8% (44)	31.6% (27)	7.1% (6)	3.4% (2)	1.1% (2)	5.0% (3)
Sex						
Male	42.8% (44)	30.9% (35)	8.5% (10)	6.2% (7)	4.9% (8)	6.8% (7)

Female	52.6% (64)	26.5% (30)	7.2% (8)	4.7% (6)	0.8% (3)	8.2% (9)
Age group						
Less than 35 years	25.2% (17)	40.5% (24)	13.4% (7)	8.4% (4)	5.7% (6)	6.9% (6)
35 years or over	58.2% (91)	23.2% (41)	5.3% (11)	4.1% (9)	1.3% (5)	7.9% (10)
Ethnicity						
European	52.9% (102)	26.9% (56)	8.5% (16)	2.7% (8)	2.6% (8)	6.4% (13)
NZ Māori	35.1% (5)	30.8% (4)	4.9% (1)	19.2% (4)	1.5% (2)	8.5% (2)
Other ethnic group	5.7% (1)	44.4% (5)	0.8% (1)	22.7% (1)	3.9% (1)	22.5% (2)
Favourite gambling activity						
Lotto	49.2% (49)	28.0% (30)	8.6% (9)	3.4% (4)	0.9% (3)	10.0% (7)
Instant Kiwi	38.5% (4)	20.3% (2)	5.5% (2)	35.2% (2)	0.0% (0)	0.5% (1)
Other lotteries/raffles	67.6% (11)	29.6% (4)	0.0% (0)	0.0% (0)	0.0% (0)	2.9% (1)
Non-casino gaming machines	68.3% (13)	21.0% (5)	0.7% (1)	0.0% (0)	10.1% (3)	0.0% (0)
Betting on horse and dog races	50.4% (14)	37.0% (10)	5.2% (2)	6.7% (3)	0.2% (1)	0.5% (1)
Card games played for money	100% (7)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other gambling activities	22.2% (5)	40.8% (9)	20.8% (3)	1.8% (2)	3.7% (2)	10.8% (3)
No preference	28.4% (5)	23.6% (5)	6.4% (1)	6.3% (2)	19.9% (2)	15.5% (3)
Total	48.4% (108)	28.3% (65)	7.7% (18)	5.4% (13)	2.6% (11)	7.6% (16)

Variable	Frequency of drinking					
	Never	Once per month or less	2-4 times per month	2-3 times per week	Four or more times per week	No reply
Gambling status						
Problem	6.7% (6)	18.8% (18)	29.3% (20)	26.7% (13)	17.8% (16)	0.7% (1)
Infrequent	8.2% (10)	26.0% (23)	22.1% (19)	29.3% (25)	13.3% (11)	1.1% (1)
Regular	8.1% (9)	12.4% (13)	35.7% (33)	27.0% (22)	16.1% (15)	0.7% (1)
Sex						
Male	6.6% (9)	17.7% (25)	23.3% (30)	31.7% (29)	20.8% (27)	0.0% (0)
Female	9.2% (16)	21.9% (29)	31.3% (42)	25.9% (31)	10.2% (15)	1.5% (3)
Age group						
Less than 35 years	4.6% (4)	21.7% (14)	33.5% (28)	20.3% (14)	19.8% (8)	0.0% (0)
35 years or over	9.5% (21)	19.5% (40)	25.7% (44)	31.5% (46)	12.5% (34)	1.3% (3)
Ethnicity						
European	8.7% (22)	20.1% (50)	27.0% (63)	27.1% (48)	16.0% (39)	1.1% (3)
NZ Māori	6.5% (2)	14.7% (3)	38.6% (6)	40.2% (8)	0.0% (0)	0.0% (0)
Other ethnic group	1.3% (1)	29.0% (1)	26.3% (3)	27.5% (4)	15.9% (3)	0.0% (0)
Favourite gambling activity						
Lotto	5.3% (8)	23.0% (25)	28.4% (32)	28.4% (26)	14.4% (18)	0.5% (1)
Instant Kiwi	10.7% (3)	10.3% (2)	43.4% (6)	24.1% (2)	11.5% (1)	0.0% (0)
Other lotteries/raffles	17.5% (4)	26.8% (5)	20.3% (4)	28.7% (5)	6.6% (2)	0.0% (0)
Non-casino gaming machines	6.4% (1)	31.9% (6)	30.4% (5)	21.1% (4)	9.8% (6)	0.5% (1)
Betting on horse and dog races	0.3% (1)	14.2% (4)	3.8% (5)	47.9% (11)	33.7% (11)	0.0% (0)
Card games played for money	2.3% (2)	8.8% (2)	58.9% (5)	0.0% (0)	0.0% (0)	0.0% (0)
Other gambling activities	8.5% (3)	10.3% (4)	40.9% (12)	26.5% (6)	13.9% (2)	0.0% (0)
No preference	16.0% (3)	14.1% (6)	19.4% (3)	24.9% (6)	16.7% (2)	8.8% (1)
Total	8.1% (25)	20.2% (54)	28.0% (72)	28.3% (60)	14.6% (42)	0.9% (3)

Variable	AUDIT Caseness	
	Case	Not a Case
Gambling status		
Problem	37.3% (23)	62.7% (51)
Infrequent	14.7% (11)	85.3% (78)
Regular	18.1% (13)	81.9% (80)
Sex		
Male	22.2% (30)	77.8% (90)
Female	13.0% (17)	87.0% (119)
Age group		
Less than 35 years	22.1% (19)	77.9% (49)
35 years or over	14.8% (28)	85.3% (160)
Ethnicity		
European	13.9% (35)	86.2% (190)
NZ Māori	36.8% (8)	63.3% (11)
Other ethnic group	30.8% (4)	69.2% (8)

Favourite gambling activity		
Lotto	15.0% (18)	85.0% (92)
Instant Kiwi	31.7% (3)	68.3% (11)
Other lotteries/raffles	0.0% (0)	100% (20)
Non-casino gaming machines	10.6% (5)	89.4% (18)
Betting on horse and dog races	29.5% (9)	70.5% (23)
Card games played for money	2.7% (1)	97.3% (8)
Other gambling activities	21.9% (7)	78.1% (20)
No preference	26.9% (4)	73.1% (17)
Total	16.9% (47)	83.2% (209)

Variable	Frequency of Tobacco Use					
	Never	**Once per month or less**	**A few times per week**	**1-20 times per day**	**20 or more times per day**	**No reply**
Gambling status						
Problem	49.5% (39)	6.1% (5)	8.2% (4)	20.1% (14)	16.2% (12)	0.0% (0)
Infrequent	69.3% (64)	2.3% (2)	8.1% (5)	14.9% (11)	5.4% (7)	0.0% (0)
Regular	70.9% (67)	0.0% (0)	8.4% (4)	11.7% (13)	8.4% (8)	0.6% (1)
Sex						
Male	68.4% (80)	0.4% (4)	11.6% (7)	12.2% (15)	6.8% (13)	0.6% (1)
Female	70.0% (90)	2.3% (3)	5.8% (6)	14.9% (23)	7.0% (14)	0.0% (0)
Age group						
Less than 35 years	59.2% (40)	2.7% (2)	14.9% (7)	15.9% (14)	6.4% (4)	0.9% (1)
35 years or over	73.4% (130)	1.0% (5)	5.6% (6)	12.9% (24)	7.2% (23)	0.0% (0)
Ethnicity						
European	73.0% (156)	0.9% (6)	6.5% (8)	13.5% (32)	5.8% (22)	0.3% (1)
NZ Māori	21.5% (6)	8.0% (1)	29.3% (4)	24.9% (5)	16.4% (3)	0.0% (0)
Other ethnic group	88.0% (8)	0.0% (0)	1.7% (1)	0.8% (1)	9.5% (2)	0.0% (0)
Favourite gambling activity						
Lotto	68.0% (76)	0.0% (1)	10.4% (5)	13.7% (17)	7.8% (11)	0.0% (0)
Instant Kiwi	45.1% (5)	0.0% (0)	0.3% (1)	41.1% (6)	13.5% (2)	0.0% (0)
Other lotteries/raffles	85.8% (17)	6.3% (1)	0.0% (0)	7.9% (2)	0.0% (0)	0.0% (0)
Non-casino gaming machines	76.4% (12)	0.6% (1)	2.9% (2)	0.4% (1)	19.7% (7)	0.0% (0)
Betting on horse and dog races	81.3% (23)	0.9% (2)	12.9% (2)	4.5% (3)	0.4% (2)	0.0% (0)
Card games played for money	68.1% (6)	0.0% (0)	27.8% (1)	2.7% (1)	1.4% (1)	0.0% (0)
Other gambling activities	64.1% (15)	9.2% (2)	9.5% (2)	14.4% (6)	2.8% (2)	0.0% (0)
No preference	70.2% (16)	0.0% (0)	0.0% (0)	17.2% (2)	8.8% (2)	3.9% (1)
Total	69.4% (170)	1.5% (7)	8.2% (13)	13.7% (38)	6.9% (27)	0.3% (1)

Variable	Frequency of Marijuana use					
	Never	**Once per month or less**	**2-4 times per month**	**2-3 times per week**	**Four or more times per week**	**No reply**
Gambling status						
Problem	84.4% (62)	8.4% (6)	1.9% (1)	2.8% (3)	2.5% (2)	0.0% (0)
Infrequent	90.4% (82)	5.0% (4)	2.4% (2)	2.3% (1)	0.0% (0)	0.0% (0)
Regular	95.8% (88)	3.1% (3)	0.0% (0)	0.4% (1)	0.0% (0)	0.6% (1)
Sex						
Male	87.0% (103)	7.7% (9)	0.9% (2)	3.6% (4)	0.2% (1)	0.6% (1)
Female	96.4% (129)	1.9% (4)	1.7% (1)	0.0% (1)	0.0% (1)	0.0% (0)
Age group						
Less than 35 years	77.6% (51)	12.9% (10)	3.7% (2)	4.7% (3)	0.2% (1)	0.9% (1)
35 years or over	98.4% (181)	0.9% (3)	0.5% (1)	0.3% (2)	0.0% (1)	0.0% (0)
Ethnicity						
European	92.9% (203)	3.4% (12)	1.5% (2)	1.8% (5)	0.1% (2)	0.3% (1)
NZ Māori	83.3% (17)	16.0% (1)	0.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Other ethnic group	100.0% (12)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Favourite gambling activity						
Lotto	92.0% (101)	3.3% (5)	1.9% (1)	2.8% (3)	0.0% (0)	0.0% (0)
Instant Kiwi	79.4% (11)	20.6% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other lotteries/raffles	100% (20)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Non-casino gaming machines	98.8% (22)	0.0% (0)	1.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Betting on horse and dog races	99.0% (29)	0.5% (1)	0.0% (0)	0.4% (1)	0.2% (1)	0.0% (0)
Card games played for money	95.9% (7)	1.4% (1)	0.0% (0)	0.0% (0)	2.7% (1)	0.0% (0)
Other gambling activities	92.2% (24)	7.7% (2)	0.0% (0)	0.2% (1)	0.0% (0)	0.0% (0)
No preference	86.0% (18)	5.3% (1)	4.9% (1)	0.0% (0)	0.0% (0)	3.9% (1)

Total	92.5% (232)	4.3% (13)	1.4% (3)	1.5% (5)	0.1% (2)	0.3% (1)

Variable	Frequency of other drug use					
	Never	**Once per month or less**	**2-4 times per month**	**2-3 times per week**	**4 or more times per week**	**No reply**
Gambling status						
Problem	87.9% (67)	8.3% (5)	1.9% (1)	0.0% (0)	2.0% (1)	0.0% (0)
Infrequent	100.0% (89)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Regular	98.7% (91)	0.0% (0)	0.0% (0)	0.0% (0)	0.7% (1)	0.6% (1)
Sex						
Male	98.6% (113)	0.5% (4)	0.1% (1)	0.0% (0)	0.2% (1)	0.6% (1)
Female	99.4% (134)	0.1% (1)	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)
Age group						
Less than 35 years	97.9% (62)	0.7% (3)	0.2% (1)	0.0% (0)	0.2% (1)	0.9% (1)
35 years or over	99.6% (185)	0.1% (2)	0.0% (0)	0.0% (0)	0.4% (1)	0.0% (0)
Ethnicity						
European	99.1% (218)	0.3% (5)	0.0% (0)	0.0% (0)	0.3% (1)	0.3% (1)
NZ Māori	98.6% (17)	0.0% (0)	0.7% (1)	0.0% (0)	0.7% (1)	0.0% (0)
Other ethnic group	100.0% (12)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Favourite gambling activity						
Lotto	99.3% (107)	0.2% (2)	0.0% (0)	0.0% (0)	0.5% (1)	0.0% (0)
Instant Kiwi	100.0% (14)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other lotteries/raffles	100.0% (20)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Non-casino gaming machines	98.8% (22)	0.0% (0)	1.2% (1)	0.0% (0)	0.0% (0)	0.0% (0)
Betting on horse and dog races	100.0% (32)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Card games played for money	95.9% (7)	4.1% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other gambling activities	98.4% (20)	0.9% (1)	0.0% (0)	0.0% (0)	0.7% (1)	0.0% (0)
No preference	96.2% (25)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	3.9% (1)
Total	99.1% (247)	0.3% (5)	0.1% (1)	0.0% (0)	0.3% (2)	0.3% (1)

Survey participants who acknowledged that they had consumed alcohol at some time in their lives were asked how many drinks containing alcohol they have on a typical drinking day. From Table 42 it is evident that it was estimated that nearly half of adults who had ever gambled usually had one or two drinks on a typical drinking day. A further 28 percent had three or four, eight percent five or six, five percent seven to nine, and three percent ten or more. Eight percent did not answer this question, either because their drinking pattern was variable and they could not identify a typical drinking day or because they declined to respond.

It was estimated that a quarter of the problem gamblers typically drank seven or more drinks of alcohol on days that they consumed alcohol. This is a high rate relative to infrequent (10%) and regular (5%) gamblers. Whereas just under a third (32%) of problem gamblers typically consumed one or two drinks, approximately a half of infrequent (47%) and regular (52%) gamblers had this level of typical consumption.

Relative to people in the two non-problem gambling groups, problem gamblers are estimated to have an elevated prevalence of hazardous alcohol consumption, a rate more than double that for the total population of adults who had gambled at some time in their lives. Well over a third (37%) of problem gamblers are classified as hazardous drinkers (AUDIT cases). People with a preference for Instant Kiwi, betting on horse or dog races, or who report no gambling preference also have higher rates than people who prefer other forms of gambling.

Thirty percent of adults were estimated to have smoked tobacco during the past 12 months. A half of the problem gamblers were in this category, indicating an association between tobacco use and problem gambling. Gender differences are not evident.

It was estimated that eight percent of adults had used cannabis during the past 12 months. Double this percentage of problem gamblers was estimated to have used cannabis during this period, indicating somewhat higher usage among problem gamblers than among people in the two non-gambling groups.

One percent of adults were estimated to have used illicit drugs other than cannabis during the past 12 months. Problem gamblers were the only group considered in Table 42 that contained more than ten percent of people who acknowledged using other illicit drugs. While the great majority of problem gamblers did not indicate having used these substances, on the basis of the information presented they appear to be 12 times more likely to use them than adults who have ever gambled.

The Relative Importance of Risk Factors for Problem Gambling

Interpretation of information in the preceding sections is often difficult because of inter-relationships between a number of the variables that are associated with gambling participation status. For example, age is associated with both age first started gambling and participation in particular forms of gambling. All three of these variables are also associated with problem gambling. When relationships between any one of these predictor or independent variables and problem gambling are considered, it is not known whether the relationship is direct or whether it is a consequence of associations that both the independent variable and problem gambling have with other variables. In Phase One of the National Prevalence Survey, this matter was addressed by a variety of forms of multivariate analysis including logistic regression.

As mentioned earlier, aspects of the design of Phase Two place constraints on the application of inferential statistics, including logistic regression. While it is not uncommon for these constraints to be ignored and for tests of statistical significance to be applied to data sets such as that presented in this report, it is not good practice to do so and implies a degree of precision that is illusory. However, unless some account is taken of inter-relationships between variables of particular interest, the meaning of associations between these variable and problem gambling is often unclear.

In the present study, logistic and multiple logistic regression was conducted with a view to identifying factors that may be of fundamental importance in predicting problem gambling. The rationale for this and the main findings are outlined in the remainder of this section.

The sample design for Phase Two of the present survey is highly complex. The population is stratified, clustered then stratified on the basis of the main variable of interest, problem gambling status. Phase Two of the Gaming Survey is also subject to non-consent and non-response. The time and expense required to take full account of the complexity of the sample design in the construction of standard errors for logistic regression is not justified given the level of non-response. Therefore, as mentioned earlier, no attempt was made to calculate sample design adjusted standard errors. Because error from the sample design and non-response has not been accounted for, the reported results from the logistic regressions should be treated as exploratory or indicative rather than as formal hypothesis tests for the population of New Zealanders who have gambled.

Note that the point estimates, however, have been weighted to take account of the sample design.

Phase Two is a case-control study in that the cases (problem gamblers) were sampled at a different rate than the controls (non-problem gamblers). The slight differences in sampling fractions for the three control strata (0.041, 0.056, 0.069) were ignored in the logistic regressions. There are two approaches to carrying out logistic regression on case-control studies: the design based approach and the model based approach (Scott & Wild, 2000).

Under the design based approach weights are used that take account of all levels of the sample design. Because cases are sampled at a higher rate than controls they are down weighted, reducing the effective sample size for cases. Phase Two of the Gaming Survey was not a powerful enough study to detect significant effects in logistic regressions using the design based approach.

Under the model based approach the case-control stratification is ignored in the weighting so that the cases are not down weighted. The consequence of this approach is that estimates of prevalence are biased because there is a higher proportion of cases in the sample than the population. However estimates of odds ratios are unbiased. It is the odds ratios that appeared most important from the models fitted that will be presented in this section. The p-values are not be presented because of the uncertainty surrounding them from the complex design and potential non-response bias.

The logistic regression was carried out initially on each variable alone, with insignificant variables not being considered further. Those variables that seemed important were put in a model with the demographics that appeared important in Phase Two of the Gaming Survey and known to be significant from Phase One of the Gaming Survey, where robust logistic regression modelling was carried out. Those demographics are age, gender and ethnicity. Because of the small sample size, age was collapsed to younger than 35 and the rest and ethnicity was collapsed to European and the rest. The odds ratios for these demographic variables in Phase Two are gender (OR=3: men more likely to be lifetime problem gamblers), ethnicity (OR=0.3: Europeans less likely to be lifetime problem gamblers), and age (OR=0.3: people aged 35 years or older less likely to be problem gamblers).

Odds ratios for other variables that appeared important in a model with the three demographic variables are reported as follows:

- Preferred type of gambling is continuous: OR = 8
- Had a big win in the past: OR = 2
- Nearly had a big win in the past: OR = 2.

That is, according to our sample, people that have had or nearly had a big win are about twice as likely to be problem gamblers as people without these characteristics. People whose preferred type of gambling is continuous are about eight times as likely to have a gambling problem as those who have no preference or prefer a non-continuous form.

Other variables considered that were not significant in a model with the known significant demographic variables were:

AUDIT
GHQ
Age first gambled
How much did the family you grew up with gamble
How much does your present family gamble
How much do your friends gamble
How much do your workmates gamble
Advertising awareness

as well as all demographic variables from the Phase One study.

3.6 Relationships between the Major Measures of Problem Gambling and their Implications for the Phase One Prevalence Estimates

Introduction

An important aim of the present study was to assess the degree of correspondence between Phase One performance on the SOGS-R (the main measure of problem gambling used in Phase One of the NPS) and two other measures of problem gambling, namely the Fisher DSM-IV Screen and interviewer DSM-III-R ratings. Apart from providing an indication of the reliability of the SOGS-R, examination of the inter-relationships between these measures extends our knowledge about how each of them performs in general adult population settings.

As indicated in Chapter One, it is sometimes possible to use information from additional problem gambling measures to refine problem gambling prevalence estimates that are based on only one measure (Abbott & Volberg, 1999b: Gambino, 1999a). This can be accomplished either by embedding them within the same survey or, as in Abbott and Volberg (1992), by administering them to selected groups of participants in a second phase survey. To date, there has been only one attempt in the gambling studies field to use information of this type to refine prevalence estimates. This attempt (Abbott & Volberg, 1992; 1996) is discussed in Appendix One.

In this section, relationships between the three major measures of problem gambling used in Phases One and Two of the NPS will be examined. The feasibility of using this information to revise the Phase One probable pathological and problem gambling prevalence estimates is then considered.

Relationships Between the SOGS-R, Fisher Screen and DSM-III-R Interviewer Ratings

As discussed in Appendix One, the SOGS-R has scales that assess both lifetime and current probable pathological and problem gambling. Although the former scale is widely regarded as a lifetime measure, it has been shown that many problem gamblers, especially those who no longer report experiencing problems currently, fail to report past problems when re-assessed a number of years after their initial assessment (Abbott, Williams & Volberg, 1999). This is discussed in Appendix One where it is concluded that while the SOGS-R lifetime scale provides a better indicator of lifetime (past and existing

problems) problems than current measures, it is conservative in this regard. In other words, it fails to detect a substantial proportion of problem gamblers who, in fact, experienced problems in the past. This may also be the case for some or all of the other so-called 'lifetime' measures of other mental disorders. If so, this has very important implications for the general field of psychiatric epidemiology as well as for the study of pathological and problem gambling.

Although the SOGS-R and the original SOGS (which does not include a current scale) remain the most adequately validated and widely used screening tests for problem gambling in clinical and epidemiological research, they were based on the original 1980 DSM-III diagnostic criteria for pathological gambling. Although they were subsequently validated using the revised 1987 DSM-III-R criteria, since then these criteria have also been updated. The current criteria, which are outlined in the DSM-IV, are presently in the process of revision and are likely to change again (Abbott & Volberg, 2000).

A number of authorities in the field of gambling studies have called for the development of new measures of problem gambling based on the DSM-IV. While only partially validated, a number of instruments of this type have recently been introduced. These measures are critically reviewed in Abbott and Volberg (1999a). The most promising of the new DSM-IV instruments, the Fisher Screen, was used in the present study as well as in most of the other NZGS surveys and the 1998 Swedish national survey (Rönnberg, Volberg & Abbott et al, 1999). The Fisher Screen uses a 12 month timeframe and is thus a current measure. As mentioned earlier, the SOGS-R also includes a current measure. In its original form, a six month timeframe was employed. As discussed earlier and in Abbott & Volberg (1999a; 2000), although a 12 month frame is now typically used for the current SOGS-R scale, the six month version was retained in Phase One of the NPS to facilitate comparison with the findings of the 1991 National Survey.

Double blind interviewer ratings based on DSM-III-R criteria for pathological gambling were used in Phase Two of the 1991 national survey. As discussed in Appendix One, these ratings were considered to provide a proxy for diagnostic interviews and were used to refine the 1991 Phase One probable pathological gambling prevalence estimates. In both the 1991 and 1999 national surveys, the interviewer assessments were completed following the administration of the full Phase Two interview. The interview covered aspects of each participant's gambling and problem gambling history. In the present study, this included the Fisher Screen that consists of questions relevant to most of the DSM-III-R diagnostic criteria.

In making their DSM-III-R ratings, interviewers were asked to provide a global assessment, based on all of the information presented by each participant as well as on their own observations and impressions. As in 1991, the assessors were not trained clinicians and the reliability of their assessments was not formally examined. In contrast to the SOGS-R and Fisher Screen, the interviewer ratings were not bound by a timeframe and are probably best regarded as a lifetime rather than a current measure. However, given that the ratings were made following the administration of interviews that included the Fisher Screen, they are unlikely to provide an assessment that is independent of this measure. However, both the interviewer ratings and Fisher Screen can be regarded as providing measures that are independent of the SOGS-R which was presented in Phase One by different interviewers. The Phase Two interviewers had no knowledge of their interviewee's Phase One performance.

Correspondence between SOGS-R and Fisher Screen Performance

Table 43 provides information concerning the degree of correspondence between the two current measures of problem gambling used in the NPS.

From Table 43 it is evident that nine of the 11 SOGS-R defined current probable pathological gamblers (82%) are also classified as probable pathological gamblers by the Fisher Screen. The remaining two (18%) are classified as problem gamblers by this screen. In other words, none of the SOGS-R defined current problem gamblers who were reassessed in Phase Two using this alternative measure of disordered gambling were assessed as being free of gambling problems, although in two of the 11 cases, the extent of their problems is assessed as being less serious.

Table 43: Comparison of SOGS-R Current Assessment with Fisher Screen Performance

Current SOGS-R Status	Fisher Screen Status			Totals
	Probable pathological	Problem	No problem	
Probable pathological	9	2	0	11
Problem	5	7	10	22
No problem	6	8	209	223
Totals	20	17	219	256

Seven of the 22 SOGS-R defined current problem gamblers (just under a third) are also assessed as problem gamblers by the Fisher Screen. A further five (just under a quarter) are assessed by the Fisher Screen as probable pathological gamblers. The remaining 10 (almost half) scored within the no problem range on this measure.

Two hundred and twenty-three people who were defined by the current SOGS-R as being non-problem gamblers were also re-assessed in Phase Two using the Fisher Screen. Six of these people (3%) were assessed by the latter screen as being probable pathological gamblers, eight (4%) were assessed as problem gamblers and the remaining 209 were 'confirmed' as non-problem gamblers.

From Table 43 it can be seen that whereas only 11 SOGS-R current probable pathological gamblers were included in the total Phase Two sample, the Fisher screen detected 20. However, the two screens produced more similar numbers of problem gamblers (22 versus 17) and non-problem gamblers (223 versus 219). If the probable pathological and problem gamblers are combined, the SOGS-R generates 33 'cases' and the Fisher Screen 37. **These findings suggest that, in the present situation using conventional criterion scores, the SOGS-R is considerably more conservative than the Fisher Screen with respect to the classification of probable pathological gamblers and slightly less conservative in the classification of problem gamblers.**

The possible implications of the findings discussed to this point for the Phase One probable pathological gambling prevalence estimates will be considered shortly. However it may be concluded that there is a moderately high level of

agreement between these two screening tests with respect to the assessment of current probable pathological and problem gamblers versus non-problem gamblers. This is especially so considering that the screens have somewhat different time frames (6 versus 12 months) and were administered over a month apart by different interviewers using different assessment modes (telephone interview versus face-to-face interview).

As discussed earlier, when a second phase assessment provides a definitive or more accurate diagnosis of a condition under investigation, it is possible to conduct a formal assessment of the performance of a screening test as a diagnostic instrument. Given that the Fisher Screen is based on the most recent version of the DSM diagnostic criteria for pathological gambling, it might be argued that it is reasonable to assume that it provides a proxy for a DSM-IV diagnostic interview. One problem with this is that the Fisher Screen has not been fully validated by comparing how well it actually performs in this respect. Again, as argued previously and elsewhere (Abbott & Volberg, 1999a; 1999b), it is highly questionable whether any assessment tool, including clinical interviews, in fact provides a definitive measure of pathological gambling. Abbott and Volberg, like some other authorities (e.g. Shafer, Hall & Vander Bilt, 1997), maintain that it is more appropriate to regard all problem gambling assessments as alternative measures of the underlying pathological gambling construct.

Noting the provisos made in the preceding paragraph and elsewhere, **if, for the purpose of analysis, it is assumed that the Fisher Screen can validly serve as a proxy for a definitive clinical diagnosis of pathological gambling**, how well does the current SOGS-R scale assess pathological gambling in the present context? This question is addressed in relation to information presented in Table 44.

Table 44: Examination of the Current SOGS-R as a Diagnostic Test for Pathological Gambling

Test (Current SOGS-R Status)	'True' (Fisher Screen) Status		
	Case ('Pathological')	Not a Case	Totals
Case (Probable pathological)	TP = 9	FP = 2	11
Not a case (Not pathological)	FN = 11	TN = 234	245
Totals	20	236	256

Se = TP / (TP + FN) = 9 / 20 = 0.45
1 - Sp = FP / (FP + TN) = 0.01
PPV = TP / (TP + FP) = 0.82
1 - NPV = FN/ (FN + TN) = 0.05
Ef = (TP + TN) / (TP + FP + FN + TN) = 0.95

In Table 44

- TP refers to true positives, people who have the disorder in question, in the present context probable pathological or problem gambling, and who are correctly identified as having it on the basis of their Fisher screening test performance

- FP refers to false positives, people who do not have the disorder but are incorrectly identified as having it on the basis of their screening test performance

- FN refers to false negatives, people who have the disorder but are incorrectly identified as not having it on the basis of their screening test performance

- TN refers to true negatives, people who do not have the disorder and are correctly identified as not having it on the basis of their screening test performance.

Screening or diagnostic tests have two major purposes, namely to:

- detect a given disorder or problem among people who have it
- avoid the inclusion of people who do not have it.

Tests vary with respect to the extent to which they accomplish these purposes. Their performance in this regard is assessed by two measures, namely sensitivity (Se) and specificity (Sp). Sensitivity is determined by dividing the number of true positives by the sum of the true positives and false negatives [i.e. Se = TP / (TP + FN)]. Because the complement of specificity (1 - Sp), the false positive rate of the test, is an equivalent definition, specificity can be defined as = 1 - Sp = FP / (FP + TN). The overall performance of a test is assessed by its efficiency, the extent to which it correctly classifies people who do and do not actually have the disorder. Efficiency is calculated by dividing the sum of the true positives and true negatives by the sum of the true positives, false positives, false negatives and true negatives [i.e. Ef = (TP + TN) / (TP + FP + FN + TN)].

The accuracy of tests, for diagnostic purposes, is typically measured by their predictive value. There are two types, positive predictive value (PPV) and negative predictive value (NPV). The PPV assesses the likelihood that a positive test result is a true positive. The NPV assesses the likelihood that a negative test result is a true negative.

The various measures of the SOGS-R performance as a diagnostic test have been calculated and are included in Table 44. **It is important to note that these calculations have been based on the assumption that the 256 people who were assessed using the SOGS-R and re-assessed using the Fisher Screen constitute the total sample**. They do constitute the total Phase Two sample. However, when the information contained in Table 44 is used to attempt to refine the Phase One current probable pathological gambling prevalence rate, it is necessary to also take account of the fact that only a portion of the original Phase One participants were reassessed with the Fisher Screen in Phase Two. The statistical adjustments required to accomplish this do not alter the positive or negative predictive values of the test as these rates are based on the row totals rather than the column totals. However, the sensitivity, specificity and efficiency values usually change when statistical corrections are made to take account of verification bias that results from reassessing only a subset of Phase One participants (Gambino, 1999a).

Discussion here is confined to the SOGS-R screen's PPV and NPV with respect to current probable pathological gambling.

The current SOGS-R has a high PPV of 0.82. As mentioned above, nine of the 11 people assessed by this measure as probable pathological gamblers (82%) were subsequently found to be 'pathological gamblers' when reassessed using the Fisher Screen. There were only two false positives. Again, as mentioned earlier, both of these people were classified as problem gamblers. This means that all of the 11 had problems of some degree and that had the cut-off score on the SOGS-R been changed from five to three, it would have had a PPV of one. Irrespective of whether or not the Fisher Screen is more or less valid than the SOGS-R as a measure of serious gambling problems, there is very high agreement between the two screens in this regard.

It is also evident from Table 44 that the SOGS-R has a high NPV (less than 0.05 were misclassified). In other words, over 95 percent of people assessed by the SOGS-R as not being probable pathological gamblers were also not 'pathological gamblers' according to the Fisher Screen.

Correspondence between the SOGS-R and Interviewer Ratings

Table 45 shows how the current SOGS-R scale performs relative to the interviewer DSM-III-R assessments for pathological gambling. As mentioned earlier, the interviewer assessments are probably better regarded as a lifetime measure than as a current measure. Although based on the DSM-III-R diagnostic criteria, the assessments were made by lay interviewers rather than clinicians and their validity and reliability are uncertain.

Table 45: Comparison of SOGS-R Current Assessment with Interviewer Assessment

Current SOGS-R Status	Interviewer Assessment Status		Totals
	Probable Pathological	No Problem	
Probable Pathological	5	6	11
Problem	4	18	22
No Problem	6	217	223
Totals	15	241	256

Whereas the SOGS-R identified 11 current probable pathological gamblers, the interviewers identified 15 people as (presumably) lifetime probable pathological gamblers. A less severe 'problem gambling' category was not provided by the interviewer ratings.

From Table 45 it is apparent that five of the 11 SOGS-R defined current probable pathological gamblers are assessed by the interviewers as being (lifetime) probable pathological gamblers. Four of the 22 SOGS-R current problem gamblers and six of the non-problem gamblers were also assessed by the interviewers as (lifetime) probable pathological gamblers.

In the 1991 national survey, ten out of 25 current SOGS-R pathological gamblers were similarly assessed as being 'pathological' by interviewers using DSM-III-R diagnostic criteria. These ratios (PPVs of 0.46 in the present survey and 0.40 in 1991) are similar. The NPVs are also similar (0.96 in the present study and 0.94 in 1991) (Abbott & Volberg, 1992; 1996).

Comparison of SOGS-R lifetime probable pathological and problem gambling assessments and interviewer ratings are presented in Table 46.

Table 46: Comparison of SOGS-R Lifetime Assessment with Interviewer Assessment

Lifetime SOGS-R Status	Interviewer Assessment Status		Totals
	Probable Pathological	No Problem	
Probable Pathological	12	18	30
Problem	2	42	44
No Problem	1	181	182
Totals	15	241	256

Twelve of the 30 SOGS-R defined lifetime probable pathological gamblers (40%) are also rated by the interviewers as (lifetime) probable pathological gamblers. Two SOGS-R problem gamblers and one non-problem gambler are assessed by the interviewers as probable pathological gamblers. In 1991, 18 of 65 SOGS-R lifetime probable pathological gamblers were similarly rated, a PPV of 0.28. In the present study, the PPV is somewhat higher (0.40). The NPVs for the 1991 surveys was are 0.98, and, for the present survey, 0.99.

Working on the assumption that the interviewer ratings can be considered as a proxy for lifetime diagnoses of pathological gambling, in a similar way that the Fisher Screen was regarded as a proxy for a diagnosis of current pathological gambling, a more formal assessment of the lifetime SOGS-R scale is provided in Table 47.

Table 47: Examination of the Lifetime SOGS-R as a Diagnostic Test for Pathological Gambling

Test (Lifetime SOGS-R) Status	'True' (Interviewer) Status		Totals
	Case ('Pathological')	Not a Case	
Case (Probable Pathological)	TP = 12	FP = 18	30
Not a Case (Not Pathological)	FN = 3	TN = 223	226
Totals	15	241	256

Se = TP / (TP + FN) = 0.80
1 - Sp = FP / (FP + TN) = 0.07
PPV = TP / (TP + FP) = 0.40
1 - NPV = FN / (FN + TN) = 0.01
Ef = (TP + TN) / (TP + FP + FN + TN) 0.92

Table 48 compares Fisher Screen current pathological and problem gambling assessments with interviewer (lifetime) ratings of probable pathological gambling.

Forty-five percent of the Fisher Screen current probable pathological gamblers are rated by the interviewers as (lifetime) probable pathological gamblers. Thus, the PPV for the Fisher Screen (0.45) is virtually identical to that for the current SOGS-R (0.46). An additional four Fisher Screen problem gamblers and two non-problem gamblers are also assessed by the interviewers as (lifetime) probable pathological gamblers. The NPV for the Fisher Scale is 0.97. This is similar to the NPV for the current SOGS-R of 0.96.

Table 48: Comparison of Fisher Screen Assessment with Interviewer Assessment

Fisher Screen Status	Interviewer Assessment Status		Totals
	Probable Pathological	No Problem	
Probable Pathological	9	11	20
Problem	4	13	17
No Problem	2	217	219
Totals	15	241	256

A Consideration of Relationships between the Problem Gambling Measures for the Revision of the Phase One Prevalence Estimates

For the purpose of refining the 1991 National Survey Phase One prevalence estimates, the interviewer assessments were assumed to provide a more definitive measure of pathological gambling than the SOGS-R. Abbott and Volberg have since argued that this use of the interviewer DSM-III-R ratings is unlikely to be justified (Abbott & Volberg, 1999b). They have also queried whether any measure of problem gambling, including clinical interviews, can be legitimately taken as the 'gold standard' for the problem or pathological gambling construct. As mentioned earlier, they propose that all assessments, both psychometric and clinical, are best regarded as providing alternative, but in practice typically highly related, measures of problem gambling (Abbott & Volberg, 1999a).

From the foregoing, **while the logical or empirical base for doing so is suspect**, in the present study the Phase Two Fisher Screen and DSM-III-R ratings have been used to 'refine' the Phase One SOGS-R prevalence estimates. The former is used in relation to the SOGS-R current measure and the latter in relation to the lifetime measure.

As discussed earlier, the SOGS-R screen was used in Phase One of the survey to estimate the prevalence of problem gambling in the New Zealand population. The SOGS-R screen used in this context will have classified some non-problem gamblers as problem gamblers (false positives) and problem gamblers as non-problem gamblers (false negatives).

If there are the same number of false positives as false negatives, they will cancel out and the prevalence estimate will not be affected. If there are more false negatives than false positives or vice versa then the imbalance will result in an under-estimate or over-estimate of the prevalence of problem gambling.

The use of an alternative gambling problem screen in Phase Two allows investigation of the effect of false positives and false negatives on the prevalence estimate. The alternative Fisher Screen is a measure of current gambling problem so only the SOGS-R current prevalence estimates can be meaningfully investigated using it (not the SOGS-R lifetime prevalence estimate). The reference period for the Fisher Screen is 12 months. The reference period for current gambling in SOGS-R is six months.

Table 49 demonstrates the classification of Phase Two respondents' gambling problem status by SOGS-R and Fisher Screen, where 1 = problem gambler and 0 = non-problem

gambler. This table differs from Table 43 in that the probable pathological and problem gamblers are combined and referred to as problem gamblers.

Table 49: Relationships Between Current Problem and Probable Pathological Gambling Assessments using the SOGS-R and Fisher DSM-IV Screens

		SOGS-R (Current)		
		0	**1**	**Totals**
Fisher Screen	**0**	209	10	219
	1	14	23	37
	Totals	223	33	256

From the table, and as noted previously, it can be seen that the Fisher Screen classifies more respondents as problem gamblers than SOGS-R (37 compared to 33).

The Phase One prevalence estimate for problem and probable pathological gamblers in the New Zealand population can be revised using information about misclassification rates gained by applying an alternative measure at Phase Two. To revise the Phase One estimate for the prevalence of problem gamblers in the New Zealand population **it is assumed that there is no misclassification in the Phase Two and that the two screens are measures of the same thing**. Under these assumptions the misclassification rates from the Phase Two sample can be extrapolated to the Phase One sample and the prevalence estimates adjusted accordingly.

The Phase One estimate of the proportion of New Zealanders who are current problem gamblers (i.e. combined current probable pathological and problem gamblers) is 0.013. To revise this estimate you remove from it the Phase Two estimate of false positives and add to it the Phase Two estimate of false negatives.

Table 50: Population Estimates Used to Revise the Current Problem Gambling Prevalence Rate

		SOGS-R (Current)		
		0	**1**	**Totals**
Fisher Screen	**0**	2,402,331	10,122	2,412,453
	1	110,625	24,281	134,905
	Totals	2,512,956	34,402	2,547,358

From Table 50, the weighted frequencies of Phase Two respondents classified by their SOGS-R and Fisher Screen scores, false positive and false negative rates can be estimated and applied to the prevalence estimate according to the following formula

$$p_r = p \times (1 - FP) + (1 - p) \times FN$$

$p_r =$ where the revised prevalence estimate, p = Phase One prevalence estimate, FP = the false positive rate and FN = the false negative rate.

So, the revised estimate of the prevalence of current problem gamblers in the New Zealand population is:

$$p_r = 0.013 \times (24281/34402) + 0.987 \times (110625/2512956)$$

$$p_r = 0.0092 + 0.043$$

$$p_r = 0.053$$

The Phase One adult population estimate for current probable pathological gambling was 0.5 percent. Repeating the procedure for revising the prevalence estimate for current probable pathological gamblers yields the following tables and results:

Table 51: Relationship Between the Current Probable Pathological Gambling Assessments Using the SOGS-R and Fisher DSM-IV Screen

		SOGS-R (Current)		
		0	**1**	**Totals**
Fisher Screen	**0**	234	2	236
	1	11	9	20
	Totals	245	11	256

As with problem gambling, the Fisher Screen classifies more respondents as current probable pathological gamblers than SOGS-R.

Table 52: Population Estimates used to Revise the Current Probable Pathological Gambling Prevalence Rate

		SOGS-R (Current)		
		0	**1**	**Totals**
Fisher Screen	**0**	2,500,100	1,735	2,501,835
	1	33,022	12,502	45,523
	Totals	2,533,121	14,237	2,547,358

The revised prevalence estimate for current probable pathological gamblers is:

$$p_r = 0.006 \times (12{,}502/14{,}237) + 0.994 \times (33{,}022/2{,}533{,}121)$$

$$p_r = 0.005 + 0.013$$

$$p_r = 0.018$$

The alternative measure for lifetime problem gambling used in Phase Two of the survey was the interviewer assessment. The interviewer assessment only classifies respondents as probable pathological and non-probable pathological gamblers, so no revision of lifetime problem gamblers is possible.

Table 53: Relationships Between the Lifetime Probable Pathological Gambling Assessment using the SOGS-R and Interviewer DSM-III Ratings

		SOGS-R (Lifetime)		
		0	1	Totals
Interviewer Assessment	**0**	223	18	241
	1	3	12	15
	Totals	226	30	256

As noted earlier, SOGS-R classifies more respondents as lifetime probable pathological gamblers than the interviewer assessment.

Table 54: Population Estimates Used to Revise the Lifetime Probable Pathological Gambling Prevalence Rate

		SOGS-R (Lifetime)		
		0	1	Totals
Interviewer Assessment	**0**	2,490,441	19,807	2,5102,248
	1	26,565	10,546	37,110
	Totals	2,517,006	30,352	2,547,358

The revised prevalence estimate for lifetime probable pathological gamblers is:

$$p_r = 0.010 \times (10{,}546/30{,}352) + 0.990 \times (26{,}565/2{,}517{,}006)$$

$$p_r = 0.003 + 0.010$$

$$p_r = 0.014$$

This revised estimate is slightly higher than the Phase One estimate of one percent. It has been noted by Gambino (1997) that if the Phase Two measure misclassifies then the error rate of the Phase One measure will be over-estimated. **In this case, the interviewer ratings and Fisher Screen are expected to misclassify, so the error rates for SOGS-R will be over-estimated. The effect the over-estimation of error rates has on the revised prevalence estimates is uncertain.**

Given the tenuous rationale for of these calculations and the highly complex nature of the Phase Two sample, no attempt was made to construct confidence intervals for these revised estimates. It is important to note that these revisions should not be regarded as providing more accurate prevalence estimates than the original Phase One estimates. Rather, they provide an indication of rates that might have been attained had different methods been used and, perhaps, some idea of their robustness or reliability.

3.7 Gambling and Alcohol Problems among Family Members and Other People in Respondents' Lives in Relation to Gambling and Alcohol Problems

Respondents were asked if they know anyone in their life who may have or may have ever had a problem with gambling. They were asked to specify their relationship with this person. In addition to asking about people in their lives who they consider to have gambling problems, respondents were asked if either of their parents or anyone else in their family had ever had a drinking problem. They were also asked if anyone who lives in their household has had a drinking problem and the relationships of this person or these persons to them.

This information is provided in Table 55.

From Table 55 it is evident that only 17 percent of lifetime problem gamblers and 14 percent of current problem gamblers did not know at least one other person who they believed had had a problem with gambling. In contrast, somewhat more than half of non-problem gamblers said that they did not know anyone who they thought had this type of problem.

Table 55: People in Respondents' Lives Considered to Have or Have Had a Gambling Problem

Variable	Lifetime Gambling Status		Current Gambling Status	
	Problem	Non-problem	Problem	Non-problem
Gambling Problems				
Father	10.6% (9)	2.4% (5)	5.4% (2)	2.7% (12)
Mother	5.4% (7)	3.1% (4)	6.4% (4)	3.1% (7)
Brother	4.7% (6)	4.5% (5)	5.4% (2)	4.5% (9)
Sister	3.1% (4)	0.3% (1)	5.4% (3)	0.3% (2)
Spouse or Partner	4.9% (7)	1.5% (3)	7.6% (5)	1.5% (5)
Children	1.8% (3)	0.0% (0)	0.0% (0)	0.1% (3)
Cousin or other relative	19.0% (21)	10.8% (20)	15.3% (7)	11.1% (34)
Friend or someone important in respondent's life	17.7% (21)	9.3% (19)	17.5% (10)	9.5% (30)
Workmate	11.3% (12)	8.9% (16)	17.5% (7)	8.8% (21)
Other	4.4% (6)	5.1% (12)	6.0% (5)	5.0% (13)
None of these	17.1% (23)	54.3% (115)	13.7% (9)	53.5% (129)
Number of responses	119	200	54	265
Alcohol Problems				
Parent(s)	3.9% (6)	9.1% (17)	1.8% (2)	9.0% (21)
Another family member	20.4% (18)	18.0% (33)	15.5% (7)	18.1% (44)
Other person known	0.0% (0)	0.7% (1)	0.0% (0)	0.6% (1)
No one	75.7% (56)	72.3% (134)	82.7% (26)	72.3% (164)
Number of responses	80	185	35	230
Number of respondents	74	182	33	223

Both lifetime and current problem gamblers reported more often than non-problem gamblers that their father or mother had experienced gambling problems at some time. They also more often mentioned having a sister with problems. However, there was no difference between the problem and non-problem groups with respect to brothers.

In addition, problem gamblers more often mentioned that a variety of other people in their lives have or have had gambling problems, including partners or spouses, friends, and cousins or other relatives. Problem gamblers, especially current problem gamblers, also more often referred to workmates in this regard.

Whereas just under a half (46%) of non-problem gamblers indicated that they believed they knew someone who had had a gambling problem, considerably less (28%) reported that they knew someone with an alcohol problem. Contrary to expectation, problem gamblers were less likely than non-problem gamblers to report that they had a parent with an alcohol problem. The two groups did not differ with respect to other family members or to other persons known to respondents who they believe had had alcohol problems.

3.8 The Development of Gambling Problems, Self Recovery and Help Seeking

In this section, findings that relate more directly to the development of problem gambling and the reduction or cessation of gambling problems are presented. This includes consideration of help-seeking on the part of problem gamblers.

Earlier, in the 'costs and benefits' section (refer to Table 33), it was mentioned that it was estimated that 57 percent of lifetime probable pathological and problem gamblers at least rarely felt that their gambling was a problem. Later in the interview, all respondents were asked again if they felt that they had ever had a problem with gambling. **Based on responses to this question, which was answered yes or no, it was estimated that forty-one percent of lifetime problem gamblers and 55 percent of current problem gamblers considered that they had a problem with gambling at some time, either currently or in the past.**

None of the lifetime or current problem gamblers said they first noticed that they had a problem before the age of 16 years. Thirteen percent of lifetime and 17 percent of current problem gamblers felt they had a problem after the age of 15 years but before the age of 21 years. Twenty percent of lifetime problem gamblers and 11 percent of current problem gamblers considered that they first had a gambling problem after the age of 20 but before the age of 25 years. The majority of problem gamblers (67% lifetime and 72% current) felt they first had a problem after the age of 24 years.

Problem gamblers who acknowledged having problems were asked if they had had times since they developed problems when they were free or mostly free of gambling problems for six months or more. Twenty respondents (61% of the 33 who acknowledged having had problems) answered yes to this question. During these times ten said they had stopped altogether, 11 said they had reduced their participation and four mentioned some other change in their gambling. Because multiple responses could be given, participants were also asked which of these changes best described their gambling when they were free or mostly free of gambling problems. Just over a third (35%) said the best description was that they had stopped gambling, 50 percent that their involvement reduced and 15 percent that their gambling changed in some other way.

Respondents who reported periods of gambling cessation or reduction of six months or greater duration were asked in which ways they had overcome their problems at these times. They could give more than one way. They were also asked which was the most effective way. Responses to these questions are summarised in Table 56.

From Table 56 it is evident that the great majority of people who reported that they had been free of gambling problems for six months or more believed that this had been accomplished through their own efforts. This method was mentioned by 17 of the 20 people who reported problem-free periods. Friends were mentioned once, family once, and specialist agencies or a health professional 11 times.

In addition to being asked which methods they had used to overcome gambling problems, participants were also asked what method had been most effective in overcoming their problems. Of the 18 people who answered this question, the large majority (15 of the 18) said their own efforts were most effective. Two mentioned an alcohol or drug treatment centre and one said no method had been effective.

Table 56: Problem Gamblers who Acknowledged Having Problems Self Recovery and Help-seeking Behaviour

Number of periods free of gambling problems for six months or more	
0	13
1	5
2	0
3	3
4	1
5	0
6	3
Other	4
Don't know	4
Number of respondents	33
Changes in gambling behavior when free of gambling problems (multiple response for multiple periods being free of gambling problems)	
Stopped altogether	10
Reduced participation	11
Changed in some other way	4
Number of respondents	20
Methods of overcoming gambling problems (multiple response for multiple periods being free of gambling problems)	
Own efforts	17
Family	1
Friends	1
Gambling hotline	1
Gamblers anonymous or GAMANON	3
Psychologist, counsellor or psychiatrist	4
Doctor	1
Alcohol or drug treatment centre	2
Number of respondents	20
Most effective method for overcoming gambling problems	
Own efforts	15
Alcohol or drug treatment centre	2
None	1

The 33 people who acknowledged ever having had a gambling problem were also asked if they had ever received external help for their problem gambling and, if so, how useful that help had been. Eleven respondents reported 22 instances of help. This information is provided in Table 57. In response to this question, six people mentioned their family and, in all cases, this was rated as very helpful. Gamblers Anonymous and GAMANON (a mutual help organisation for families and friends of problem gamblers) were mentioned next most often, by four people. One considered that this involvement had been very helpful, and three considered it somewhat helpful. Three said they had consulted a mental health professional. One said this had been very helpful and two said it had been somewhat unhelpful. Consistent with the information given in the preceding paragraph, two people said they had obtained assistance from an alcohol or drug treatment centre and both said this had been very or somewhat helpful. The gambling hotline and general medical practitioners were the only other types of assistance obtained by more than one individual. Of the two people who contacted a GP one said this involvement had been somewhat unhelpful and one very unhelpful. In the case of the hotline, both said it had been very helpful.

Table 57: How Helpful External Help Sought for Gambling Problems Had Been

Source of help	Usefulness of help for self				
	Very helpful	Somewhat helpful	Somewhat unhelpful	Very unhelpful	Don't know/refused
Family	6	0	0	0	0
Friends	0	0	0	0	0
Workmates	0	1	0	0	0
Gambling Hotline	2	0	0	0	0
Gamblers Anonymous or GAMANON	1	3	0	0	0
Psychologist, counsellor or psychiatrist	1	0	2	0	0
GP	0	0	1	1	0
Nurse	0	0	0	0	0
Minister/priest/pastor/ monk	0	1	0	0	0
Alcohol or drug treatment centre	1	1	0	0	0
Other	0	1	0	0	0

All participants were also asked if they had ever sought help for other people who were having problems with gambling. Eleven people reported 25 instances of seeking help for others.

Information concerning help-seeking for others is provided in Table 58. From this table, it can be seen that families and mutual help groups are mentioned most often, followed by mental health professionals, the gambling hotline and friends. Respondents were asked how useful these sources of help had been. Most said that they had been very helpful or somewhat helpful.

The 20 people who reported having had problem free periods of six months or longer duration were asked if they had ever returned to having problems with gambling following a problem-free period. Nine people (45% unweighted) said they had. These people were asked what they believed were the reasons for this. Respondents could give one or more reasons. The following reasons were given:

- because more gambling was available (n=5)
- returned to gambling to win money (n=4)

- seeking excitement (n=3)
- lacked will power to stay away (n=3)
- used gambling to escape from a new problem (n=2)
- other reasons (n=3).

Table 58: Sources of Help Sought for Other People's Gambling Problems

Source of help	Usefulness of help sought for others				
	Very helpful	Somewhat helpful	Somewhat unhelpful	Very unhelpful	Don't know/refused
Family	2	3	0	0	0
Friends	2	1	0	1	0
Workmates	1	0	0	0	0
Gambling Hotline	1	1	1	0	0
Gamblers anonymous or GAMANON	2	2	1	0	0
Psychologist, counsellor or psychiatrist	0	2	0	1	0
GP	0	0	0	0	0
Nurse	0	0	0	0	0
Minister/priest/pastor/ monk	0	1	0	0	0
Alcohol or drug treatment centre	1	0	0	0	0
Other	0	0	0	0	2

4. DISCUSSION AND CONCLUSIONS

4.1 Introduction

The general aim of Phase One and Phase Two of the NPS is to advance scientific understanding of the nature of gambling and problem gambling in the New Zealand adult population, particularly with respect to their prevalence. The more specific aims of Phase Two reported in this volume are outlined at the beginning of Chapter Two. Discussion of the findings is organised around these aims. Because the main objective of the NPS was to derive population prevalence estimates for problem and probable pathological gambling, this matter is addressed first.

It is important to recall at this point that the sample size for the Phase Two study discussed here is much smaller than that of the Phase One survey from which it was drawn. Further, although the Phase Two response rate is similar to that of most previous single stage gambling surveys, it is substantially lower than the Phase One rate. Most of the Phase Two data have been weighted to facilitate generalisation of the findings to the total population of adult New Zealanders who reported having gambled at some time in their lives. However, the smaller sample size, lower response rate and lack of sampling error estimates mean that far less confidence can generally be accorded to the findings than is the case for the Phase One findings.

Because the Phase Two findings are less reliable than those obtained from Phase One, where there is disagreement between findings from the two phases those from Phase One should be considered to be more accurate. For this reason, this section of the report does not focus on topics that have been addressed previously in the Phase One report (Abbott & Volberg, 2000). Discussion, for the most part, is reserved for those findings that add to or help illuminate information obtained from the Phase One survey. It also tends to focus more on problem gambling and comparisons between problem and non-problem gamblers than on gambling participation within the total study group.

4.2 Relationships between Measures of Problem Gambling and their Implications for Estimates of the Prevalence of Problem and Probable Pathological Gambling

Dickerson and his colleagues (Dickerson, 1993; Dickerson et al, 1996) have argued that the SOGS and SOGS-R over-estimate the prevalence of problem gambling when used in general population rather than in clinical contexts. However, Abbott & Volberg (1996; 1999a; 1999b) and Gambino (1997; 1999a) have demonstrated that this claim is largely based on a failure to take the influence of false negatives into account. Although only two previous attempts have been made to formally assess the impact of classification errors (false positives and negatives) on problem gambling prevalence estimates, in both cases the revised estimates were similar to or higher than the original estimates (Abbott & Volberg, 1999b; Gambino, 1997; 1999a). In addition, the only prevalence study to measure problem gambling directly using clinical interviews rather than a screening test such as the SOGS-R obtained an estimate that was similar to rates obtained in the same country (Spain) using the SOGS (Becóna, 1996).

Earlier, reference was made to the evolution of DSM diagnostic criteria for pathological gambling and the fact that two revisions have taken place since the SOGS was developed. Although an adequately validated screening test has not yet been designed that matches the current diagnosis of pathological gambling more closely than the SOGS, a number of alternative measures have been developed and employed in a few studies. The most widely used measure of this type, the Fisher DSM-IV Screen, was used in the present survey. In the few previous studies that have employed both this new measure and the SOGS-R, there has been moderate to high agreement between performance on the two screens. In all cases, the Fisher Screen produced somewhat lower numbers of problem gamblers than the SOGS-R 12 months scale (Abbott & Volberg, 1999a; Rönnberg, Volberg & Abbott et al, 1999). In other words, it generates lower prevalence estimates of current problem and probable pathological gambling.

Apart from the issue of classification errors and the use of different measures, other authorities such as Lesieur (1994) have argued that there are a number of reasons why problem gambling prevalence surveys could be expected to under-estimate the extent of problem gambling in society. The main argument is that problem gamblers are less likely to be contacted by interviewers and more likely than non-problem gamblers to decline to be interviewed when they are contacted. Abbott and Volberg (1999a; 2000) and the Productivity Commission (1999) have more recently supported this position while noting that a degree of uncertainty prevails because there are indications that infrequent gamblers and people with little interest in gambling are also more likely to decline to participate in prevalence surveys. These people are most unlikely to be current problem gamblers. However, some could have had problems in the past.

In their longitudinal follow-up of 1991 New Zealand national survey participants, Abbott, Williams and Volberg (1999) found that a large percentage of people who were assessed as lifetime probable pathological and problem gamblers in 1991 no longer acknowledged having had problems in the past when they were re-assessed seven years later using the same measure. This finding led them to conclude that, for this reason alone, lifetime prevalence estimates based on the SOGS or other lifetime measures of problem gambling are likely to be highly conservative.

Similarly, the finding of large numbers of false negatives when the current (past 6 months) scale of the SOGS-R was used in the 1991 New Zealand national survey suggested that it too might under-detect problem gambling in general population settings. For this reason, subsequent researchers have generally adopted a 12 rather than six months timeframe. However, as mentioned earlier, it has yet to be determined whether or not this longer frame results in more accurate estimation.

As discussed elsewhere (Abbott & Volberg, 1999a; 1999b, 2000), there are a variety of additional factors that can influence the accuracy of problem gambling prevalence estimates. However, despite the fact that surveys have attained varying response rates, used different survey instruments, ranged in overall quality methodologically and have been conducted by a variety of investigators, Shaffer, Hall and Vander Bilt (1997) demonstrated that there is a high level of consistency in their findings. They conclude that this suggests that problem gambling is a 'robust phenomenon'.

The New Zealand and Swedish national prevalence studies were conducted subsequent to Shaffer, Hall and Vander Bilt's meta-analysis of North American surveys. They are

unusual in that they attained very high response rates relative to previous studies, were conducted by official government statistical agencies and are of high quality methodologically. Compared to recent studies undertaken in jurisdictions with broadly similar gambling availability, both obtained low problem gambling prevalence estimates. This raises the possibility that rather than low response rates being associated with under-estimation, they may in fact generate higher estimates than would be obtained using larger, more representative samples. This is an important issue in the New Zealand context because the 1999 national prevalence estimates are, contrary to expectation, lower than those obtained in 1991. **Among other things, the range of considerations outlined above mean, however, that it would be premature to assume that there has been a reduction in problem gambling prevalence in New Zealand during the past decade.**

While the present study does not give definitive answers to a number of important questions concerning prevalence estimation, the use of alternative measures of problem gambling within the two-phase design provides information relevant to consideration of the likely accuracy of the initial Phase One prevalence estimates. However, as Abbott and Volberg (1999a; 1999b; 2000) have argued, there is no such thing as 'true' prevalence of problem gambling because there is no definitive measure of this construct, only a number of alternative measures of varying and typically largely unknown validity. To date, despite their alleged shortcomings, the SOGS and SOGS-R remain the most fully validated and widely used of these measures.

In the present study, in addition to the SOGS-R, both the Fisher Screen based on DSM-IV diagnostic criteria and interviewer DSM-III-R ratings were used. The two latter measures were administered in Phase Two. The Fisher Screen was employed to anchor the study to the most recent DSM diagnostic criteria. The DSM-III-R ratings were employed because they had been used previously in Phase Two of the 1991 New Zealand national survey and thus provided a link with that study. In contrast to the situation in 1991 when the interviewer ratings were confined to SOGS-R defined probable pathological and problem gamblers and non-problem regular gamblers, the present study also included infrequent gamblers. For the purpose of refining the 1991 Phase One prevalence estimates, it was assumed that in the general population there were no problem gamblers among people who reported gambling less than once a week. This assumption is conservative given that many lifetime problem gamblers could be expected to gamble less than once a week at the time they were interviewed and some people with current problems would gamble on an episodic ('binge') basis.

As reported in the previous chapter, in the present study there was a moderate level of agreement between performance on the two current measures, namely the six months SOGS-R and the 12 months Fisher Screen. There was somewhat less agreement between the lifetime SOGS-R and the (lifetime) interviewer DSM-III-R ratings. In contrast to the findings of the Swedish national survey and the few North American surveys that used both the SOGS-R and Fisher Screen, in the present study the Fisher Screen classified more people as current probable pathological and problem gamblers than the current SOGS-R did. This may be due, at least in part, to the longer timeframe employed in the Fisher screen. The previous studies that employed both measures used the 12 months version of the SOGS-R. As in 1991, the interviewer assessment classified fewer people as lifetime probable pathological gamblers than the lifetime SOGS-R did. However, the difference was not as great as it was in 1991.

If it is assumed that the Fisher Screen provides a totally accurate assessment of disordered gambling, the revised current probable pathological gambling prevalence estimate for New Zealand adults is 1.8 percent and the revised combined current problem and probable pathological gambling estimate is 5.3 percent. These are substantially higher than the corresponding Phase One current SOGS-R point prevalence estimates of 0.5 percent and 1.3 percent. Similarly, if it is assumed that the DSM-III-R interviewer assessments provide an accurate diagnosis of lifetime pathological gambling, then the revised lifetime population estimate is 1.4 percent, slightly higher than the Phase One SOGS-R based equivalent of 1.0 percent.

In reality, it is probable that both the Fisher Screen and the interviewer assessments misclassify as often if not more often than the SOGS-R. This assumption is consistent with the finding that the revised lifetime probable pathological gambling estimate of 1.4 percent is somewhat lower than the revised current probable pathological gambling estimate of 1.8 percent. Logically, this is not possible. One or both estimates must be wrong. However, as there is no absolute or 'gold standard' measure of problem or pathological gambling, the extent to which the various measures misclassify cannot be determined with certainty. Thus, it is not possible to conclude that these revised estimates are any more accurate than the original. What these findings do suggest, however, is that if either the Fisher Screen or the interviewer ratings were used instead of the SOGS-R to estimate the prevalence of probable pathological and problem gambling in the New Zealand adult population, the estimates may have been higher. They are inconsistent with the view that SOGS or SOGS-R is over-inclusive and suggest that, to the contrary, they are conservative.

For the reasons outlined earlier in this report, in contrast to the situation with the Phase One SOGS-R prevalence estimates, it is not possible to derive confidence intervals for the revised prevalence estimates. However, given the smaller Phase Two sample and the complexity of the survey design, they will be substantially wider than the Phase One intervals. Like the Phase One estimates, because they are low, the confidence intervals will also be asymmetrical, extending further above than below the point prevalence estimates.

From the foregoing, it is evident that the 'revised' estimates do not provide a more accurate assessment of the number of problem gamblers in New Zealand than those obtained directly from Phase One. However, they are consistent with the view that the Phase One estimates are almost certainly conservative.

4.3 The Gambling Participation of Problem Gamblers, Regular Gamblers and Infrequent Gamblers

Introduction

The Phase Two findings extend information from Phase One concerning various aspects of the gambling behaviour of problem gamblers, people who gamble weekly or more often and people who gamble less often than once a week. As mentioned in the introduction, these groups were appropriately weighted to enable the findings to be

generalised to the population of adults who reported having ever gambled. However, unlike the Phase One data, it was not possible to calculate appropriate confidence intervals for population or sub-population estimates.

Unfortunately, it was also not feasible to separate regular (weekly or more often) continuous gamblers from non-continuous gamblers as was intended when the survey was designed. As explained earlier, this was because substantially fewer regular continuous gamblers were identified in Phase One than had been expected based on the results of the 1991 national survey. Consequently, the resulting Phase Two sample of these people was too small to meaningfully examine on its own. While this reduction in the number of regular continuous gamblers may in part result from the high 1999 Phase One response rate and more adequate representation of infrequent gamblers, it is unlikely that this is the only explanation. **It appears that the percentage of people who report participating weekly or more often in continuous forms of gambling has decreased somewhat since 1991.**

The Phase Two findings pertaining to current gambling preferences, participation, expenditure and reasons for gambling are generally consistent with the findings from Phase One.

In Phase Two, participants were asked further questions about their current and past gambling participation. In addition to being asked about their recent gambling behaviour, they were asked similar questions in relation to the time when they first started gambling and five years ago. In Phase One, participants were asked about the forms of gambling that they had ever taken part in and the forms they took part in during the past six months and past week. In Phase Two more detailed information was obtained concerning involvement in those forms that they preferred and took part in frequently. This additional information included a more fine-grained assessment of frequency of participation. It also included usual session lengths, usual expenditure per gambling session and usual persons gambled with for different types of gambling. In Phase One respondents were asked to select, from a list provided by the interviewers, their reasons for taking part in the forms of gambling that they enjoy. In Phase Two they were also asked about their reasons for gambling. However, on this occasion, the question was open-ended and related to specific forms of gambling, namely the form that each respondent said that he or she preferred. This provided more in-depth information and enabled reasons to be linked with particular gambling activities.

Gambling Preferences and Participation

In Phase One it was found that Lotto was the only form of gambling that a significant proportion (35%) of adults reported participating in weekly or more often. Apart from TeleBingo and Instant Kiwi (both 6%), less than five percent of adults said they engaged in any other specific gambling activity this often. In Phase Two, participants were asked about their frequency of participation in their favourite form of gambling and other forms that they engaged in often. **Only those who said they had a favourite form and/or participated frequently were asked about their involvement.** Responses to this question indicated that while only a small percentage of people prefer or engage frequently (weekly or more) in gambling, for some forms a large percentage of people who engage in them do so very often. In other words, while they are not widely popular, many people who do favour them appear to have a high degree of engagement. The

form that stands out in this regard is Daily Keno. Thirty percent of people who preferred this form were estimated to take part on a daily basis. Other forms with a high degree of engagement include taking money bets with friends or workmates and TeleBingo.

While the sample size is small for TeleBingo and verification using a larger sample is required, high engagement in this form by regular participants may help explain the unexpected Phase One finding of an association between frequent TeleBingo participation and problem gambling. While classified in the NPS as non-continuous, its mode of presentation on national television may lead to intense involvement on the part of a small number of people and constitute a risk factor for problem gambling. This possibility warrants more focused investigation.

As in Phase One, preferences for and frequent participation in betting on horse and dog races and non-casino gaming machines most clearly differentiate lifetime problem gamblers from non-problem gamblers. Based on the Phase Two findings, 38 percent of problem gamblers in the general adult population who report having gambled at some time are estimated to participate frequently in betting on horse and dog races and 27 percent are estimated to do likewise with respect to non-casino gaming machines. Problem gamblers are also estimated to have relatively higher levels of frequent participation in card games for money (18%), casino gaming machines (17%), other casino games (10%), housie for money (9%), other sports betting (9%), 'residual' gambling activities that were not listed separately (9%) and taking bets with friends or work-mates (7%). Much smaller numbers of non-problem gamblers said they participated frequently in these forms of gambling. These findings, for the most part, are consistent with those of Phase One and many other studies that show an association between a preference for or regular participation in forms of gambling that are continuous in nature and, in some instances, also involve an element of skill.

With respect to frequent participation in the forms of gambling that are more strongly associated with problem gambling, it is of interest that there was generally little difference between males and females. In 1991, males had much higher levels of involvement in those forms most strongly associated with problem gambling at that time (particularly betting on horse and dog races and non-casino gaming machines). Males also had significantly higher rates of problem gambling than females in 1991. While males had somewhat higher participation in these two forms of gambling in the 1999 Phase One survey, little difference was evident in Phase Two when the questions concerning frequent participation were asked somewhat differently.[1] Males and females also did not differ with respect to casino gaming machine participation in either Phase One or Two. **Thus, while the Phase One and Two findings indicate that some gender differences remain, there appears to have been convergence over time. This probably helps to explain the similar convergence noted in relation to problem gambling prevalence. This is most notable in the case of <u>current</u> probable pathological gambling (Abbott & Volberg, 2000). In the case of the 'lifetime' measures, that provide an indication of <u>past</u> problem patterns in the community, males continue to have higher prevalence rates than females.**

[1] In Phase One respondents were asked, with respect to <u>all</u> forms of gambling they indicated that they had <u>ever</u> bet on whether they took part in the past six months and past week. In Phase Two, respondents were only asked for further information about those forms of gambling that they reported to be their preferred (favourite) form and/or that they indicated that they took part in frequently. Respondents decided for themselves what constituted 'frequent' participation. With respect to each form that each respondent reported preferring or engaging in frequently, they were then asked to indicate how often they took part on a six point scale ranging from every day to less than once a month.

Age differences were also considered in Phase Two. However, because of the smaller sample size, only two categories were examined, people aged less than 35 years and people aged 35 years or over. This means that the Phase Two comparisons are 'cruder' than those employed in Phase One and that, as a consequence, some differences between people of different ages are likely to be obscured.

In Phase Two age differences between younger and older adults were minor with respect to betting on horse or dog races, non-casino gaming machines and casino gaming machines. With regard to the other forms of gambling associated with problem gambling, in some cases older adults had somewhat higher rates and in other cases younger adults had somewhat higher rates. As with gender, these findings also suggest a degree of convergence, again consistent with the failure to find significant Phase One age differences for current problem gambling prevalence. Similar changes over time with respect to age and gender have been noted in Australia (Productivity Commission, 1999), although in both the recent Australian and Swedish nationals surveys (Rönnberg, Volberg & Abbott et al, 1999), younger adults have a somewhat higher prevalence of problem gambling than older adults.

In the national Australian problem gambling survey, there were minimal sociodemograhic differences in problem gambling prevalence relative to an earlier 1991-1992 survey of four major cities (Productivity Commission, 1999). The gender convergence in both survey data and client presentations in that country has been largely attributed to increased female casino and non-casino gaming machine participation. It appears that this may also be the case in New Zealand. In recent years, female problem gamblers seeking help from the national gambling helpline have increased and in 1999 they accounted for 43 percent of calls. Ninety-one percent of the women said that gaming machines (casino and non-casino) were their primary gambling mode. In the case of men, 67 percent reported that gaming machines were their primary mode (Gruys, Hannifin & MacKinnon et al, 2000).

It is of interest that similar gender differences with respect to gambling mode have been reported in problem gamblers living in Las Vegas. This study was conducted over ten years ago and involved problem gamblers who sought professional help. Ninety-five percent of women and 74 percent of men reported that they exclusively or predominantly played video gaming machines (Hunter, 1990). These findings are of interest because the ready availability of a wide variety of gambling activities in Las Vegas in the late 1980s is similar to the situation prevailing in Australia and New Zealand in recent years. They suggest that gaming machines play a particularly important role in the development of problem gambling, especially among women, and that in diverse 'mature' gambling markets, they emerge as the dominant form in this regard. **It appears likely that gaming machines play an important role in eroding and perhaps obliterating previously marked differences in problem gambling prevalence across gender and a number of other sociodemographic groups.**

In contrast to Australia and, to a somewhat lesser extent, New Zealand, Sweden currently has a sociodemographic profile of problem gambling that is more like that of these two countries ten years ago (Rönnberg, Volberg & Abbott et al, 1999). Gender differences are particularly marked in Sweden.

In contrast to age and gender, some substantial differences were evident between the ethnic groupings considered in Phase Two. Again, the smaller sample size precluded examination of differences between some groups. Although European/Pakeha and Māori were considered separately, in Phase Two Pacific Islanders and Asians were combined with people of remaining ethnicities in an 'other ethnic group' category.

Relative to Europeans and Māori, people of other ethnicities reported much higher levels of frequent involvement in betting on horse or dog races, Daily Keno and TeleBingo. From the Phase Two findings it is estimated that 37 percent of people in this category frequently take part in betting on horse and dog races compared with 19 percent for adults generally who indicate that this is a form that they prefer or take part in regularly. Māori, relative to Europeans and people of other ethnicities, reported very high levels of involvement with casino gaming machines. In Phase One of the NPS, as in the 1991 national survey, Māori and Pacific Islanders were found to have much higher probable pathological and problem gambling prevalence rates than Europeans. In this respect, the ethnicity findings contrast with the partial convergence noted with respect to gender and age. **However, as cautioned previously, the small sample sizes for Māori and people of other ethnicities mean that Phase Two findings pertaining to these groups must be treated with caution and considered tentative pending further investigation**.

Although Pacific Islanders had very high rates of problem and probable pathological gambling in Phase One of the NPS, the remaining groups that were included in the Phase Two 'other ethnic groups' category did not. In Phase One Pacific Islanders, Asians and a residual 'other ethnic group' were examined separately in some instances. However, apart from Europeans, small sample size and high relative sampling errors for all of the other ethnic groups apart from Europeans, reduce the confidence that can be placed in their respective prevalence estimates. Relatively high numbers of people in these groups and recent migrants (a category that overlaps substantially with this category) reported that they never gambled or gambled infrequently. However, the finding of high involvement in betting on horse and dog races suggests that people in the 'other ethnic groups' category are likely to be at high risk for problem gambling.

In the recent Swedish national survey, people born outside Sweden had a high problem gambling prevalence rate that remained when adjusted in multivariate analyses that controlled for other sociodemographic factors that were also associated with problem gambling (Rönnberg, Volberg & Abbott et al, 1999). However, this was not the case for foreign-born people in the Australian national survey (Productivity Commission, 1999). Ethnicity was not considered in the Australian survey, although people who said that they spoke a language other than English at home appeared to be at greater risk for problem gambling. A recent study cited in Costello and Millar (2000) has examined gambling and problem gambling among Arabic, Chinese, Greek and Vietnamese people resident in Victoria. Although all groups had lower levels of participation than Victorian adults generally, those who did gamble spent substantially larger sums and the groups' problem gambling prevalence rates were elevated.

Further, more focused research with recent migrants and people of other ethnicities is warranted to examine gambling and problem gambling in relation to acculturation and other factors. Information to date suggests that they have a bimodal distribution with respect to gambling participation**. In other words, it is conjectured that they contain disproportionately large numbers of both non- and infrequent gamblers and**

people who gamble at high intensity on forms that are strongly associated with problem gambling. It is hypothesised that like Pacific Islanders, additional ethnic groups within the 'other' category will contain substantial numbers of problem gamblers. Apart from small sample size, it is possible that the research method used in the NPS also influenced the quality of information gathered from these groups. Observational, qualitative and more in-depth surveys based on snowball or convenience sampling can be expected to provide useful information. While these methods have some advantages, a significant shortcoming is that they do not readily facilitate generalisation of their findings to the total populations of people in the various minority ethnic groups.

Duration of Gambling 'Session' Lengths and Expenditure per Typical Session

It was evident in Chapter Three that reported usual gambling session lengths vary markedly across different forms of gambling. Those averaging 100 minutes or more for people who prefer or engage in them frequently were: other casino games, betting on horse or dog races, playing card games for money, housie and casino gaming machines. These are all continuous forms of gambling, some of which involve a degree of skill, that are associated with problem gambling.

Of the various forms, casino games and casino gaming machines have by far the highest average reported expenditure per session. Although they involve high levels of expenditure, relative to most other forms of continuous gambling few people report participating in them more than once a month. Non-casino gaming machines, betting on horse or dog races and card games are in the intermediate range. Again, these are all forms associated with problem gambling. Apart from housie and other sports betting typical per session expenditure on other forms is less than NZ$10. Most of the forms in the low expenditure category are non-continuous and are not associated with problem gambling.

People Usually Gambled With

Partners or spouses are most often mentioned as usual gambling partners in all forms of gambling considered in Phase Two. However, some forms were usually participated in alone, without the involvement or company of others. Instant Kiwi, other lotteries and raffles, TeleBingo and non-casino gaming machines were more often participated in alone than with partners or spouses. Some people who favoured Lotto and betting on horse or dog races also usually engaged in them without company. More, however, took part with a partner or spouse. Of the forms considered in this regard, casino gaming machines were least often participated in alone.

Most forms of gambling were also engaged in moderately often with other family members. This is particularly the case for TeleBingo and betting on horse or dog races. Friends were mentioned moderately often in relation to non-casino gaming machines, betting on horse or dog races and casino gaming machines. Work mates and other people were rarely mentioned.

Respondent Reasons for Gambling

In Phase One of the NPS over a half (53%) of adults said they gambled to win money (Abbott & Volberg, 2000). Entertainment or fun was mentioned next most frequently, by 37 percent of adults. Similar findings have emerged from surveys in North America and Australia (Abbott & Volberg, 1999a; Productivity Commission, 1999; Walker, 1992). As mentioned earlier, whereas in Phase One respondents selected their reasons for gambling from a list provided by the interviewer, in Phase Two reasons were sought from an open-ended question and responses were subsequently classified by the researchers. In Phase One, respondents could give more than one reason. In Phase Two, they were asked to provide their main reason only.

In the present study, the main reasons for gambling given most frequently were the same as those most often mentioned as reasons in Phase One where they were able to give more than one reason. It was estimated that forty-four percent gambled mainly to win money and that 22 percent gambled mainly for entertainment. These reasons received top ranking across all of the gender, age and ethnic groups that were examined as well as across the gambling status groups (i.e. problem gamblers, regular gamblers and infrequent gamblers). However, some groups mentioned these reasons more often than others. For example, it was estimated that men and regular gamblers more often mainly gambled to win money than did women or infrequent and problem gamblers. Problem gamblers more often mainly gambled for entertainment than members of the other gambling participation groups.

In Chapter Three it was evident that there were also some differences between the gambling status and sociodemographic groups with respect to their frequencies of lower ranking reasons. For example, problem gamblers, women and people of other ethnicities more often gave excitement as their main reason for gambling. Infrequent gamblers, women and older adults more often gambled to support worthy causes. None of the people of ethnicities other than European or Māori gave this as their main reason for gambling.

In Phase Two of the 1991 national survey (Abbott & Volberg, 1992), winning money and entertainment or fun were also the most frequently mentioned reasons for gambling. However, as that survey included only problem and regular gamblers and the sample was not weighted to facilitate generalisation to these groups within the adult population, the frequencies cannot be meaningfully compared with the findings of the present survey. However, in both surveys, problem gamblers more often mentioned gambling for entertainment and excitement than regular non-problem gamblers did.

It has often been argued that problem gamblers' gambling involvement is not primarily motivated by the objective of winning money, in part because they have lost very large sums of money, typically over a long period of time (Walker, 1992). Taken at face value, the findings of both the 1991 and 1999 national surveys fail to support this with respect to the frequency with which problem and non-problem gamblers report that winning money is the main reason they gamble. While it might be reasonably argued that problem gamblers are unaware of the primary determinants of their gambling behaviour and that their responses to questionnaires are merely surface explanations or rationalisations, the onus of demonstrating otherwise rests with researchers. Irrespective of the extent to which other factors play a significant role in problem

gamblers' gambling behaviour, it was estimated that 41 percent of problem gamblers in the present study believed that their main reason for gambling was to win money.

While problem gamblers differed little from non-problem gamblers with respect to their self reports of gambling to win money, somewhat more problem gamblers said they mainly gambled for entertainment or excitement. Forty-three percent gave one of these two reasons compared to 30 percent of non-problem regular and infrequent gamblers. This finding is consistent with the view that problem gamblers are more likely than non-problem gamblers to gamble for reasons other than winning money. However, the difference is not great and appears to be a difference of magnitude rather than kind.

The present study differed from many previous studies including Phase Two of the 1991 national survey in that it also examined reasons given for participation in particular types of gambling. Participants were only asked about their favourite form of gambling. While this enabled specific forms to be considered, it reduced the sample size which, in turn, imposed constraints on the number of forms that could be considered separately. Only the five activities that were preferred most frequently were included, namely Lotto, Instant Kiwi, other lotteries and raffles, non-casino gaming machines and betting on horse or dog races. When the gambling forms were considered separately, substantial differences were apparent with respect to the reasons given for participation.

It was estimated that 27 percent of people who favoured Lotto took part mainly to win prizes or money. A similar percentage (28%) referred to Lotto being easy to play or convenient. Relatively few (9%) mentioned big prizes. This is of interest in that it is widely believed to be the main reason why people take part in national lotteries and why they are willing to do so when a substantial percentage of the money 'invested' is not returned in prizes (Walker, 1992).

Instant Kiwi, a widely available instant or scratch lottery, had a somewhat different motivational profile to that of Lotto. Twenty-one percent of the players were estimated to take part because it is cheap to play, followed by it being entertaining (14%) and quick to play (11%). Only three percent mentioned winning prizes or money and none mentioned big prizes.

The main reason given by people who preferred purchasing other lotteries or raffles was to support a worthy cause. Sixty percent were estimated to participate for this reason. The only other reason estimated to apply to more than ten percent of people who preferred this type of gambling was ease of play (14%).

As for Lotto, just over a quarter of people who preferred non-casino gaming machines were estimated to do so mainly to win prizes or money. Somewhat less (22%) were estimated to play gaming machines for entertainment.

The only form of gambling where entertainment was the most frequently mentioned reason for taking part was betting on horse or dog racing. It was estimated that 28 percent of people who favoured track betting participated for entertainment. In contrast to the other four forms considered, significant minorities mentioned being interested and taking part to socialise. The estimates for these reasons were 23 percent and 16 percent respectively. No respondents who favoured other forms indicated that they did so because they were interested and very few did so to socialise. In contrast to non-casino gaming machines and Lotto, few (4%) were estimated to take part mainly to win

money. In Phase Two of the 1991 national survey, people who regularly took part in horse racing often mentioned that it was "a hobby, a habit or an interesting pass-time" (Abbott & Volberg, 1992). Although not quantified, the 1991 interviewers reported that a number of problem and probable pathological gamblers referred to a family involvement in horse racing.

It has been argued that increased availability and ease of access to gambling have been major factors in the increase in gambling participation in many parts of the world during the past decade (Abbott & Volberg, 1999; Costello & Millar, 2000). Some authorities refer to 'convenience gambling' to reflect the easy accessibility of many forms of gambling (Goodman, 1995). The five forms considered here are certainly widely available throughout New Zealand. While this is likely to have played a role in increasing the involvement of New Zealanders in gambling activities since the late 1980s it is of interest that, with the exception of Lotto, only a relatively small percentage of people gave this as their major reason for taking part in their favourite form of gambling.

It is important to note that the findings concerning reasons for gambling are confined to peoples' favourite form and their main reason for taking part in their favourite form. They clearly show that for those who prefer particular forms, major reasons for involvement vary considerably from one type of gambling to another. This underlines the fact that gambling is not a unitary phenomenon. It is of interest that whereas people typically report taking part in gambling in general to win money and for entertainment, other reasons were mentioned more often in relation to specific types of gambling. In some instances, winning money was seldom mentioned. Earlier, it was also reported that session lengths, typical expenditure per session and company while gambling also vary across gambling activities. Further research directed towards the examination of these and other differences could be expected to enhance our understanding of the reasons why people engage in particular types of gambling and why some forms are more strongly associated with problem gambling.

It is also likely that the importance of the various factors referred to in the preceding paragraph will vary across sociodemographic groups and change over time. Similarly, it is probable that they will vary from one society to another and that what are regarded as similar or identical forms of gambling may in fact assume diverse meanings and significance in different sociocultural contexts. Among other things, these considerations call for caution when survey findings from different societies are compared or when studies conducted in other countries are drawn on to inform social policy. While differences can be anticipated across societies and within countries with heterogeneous populations, there are also likely to be commonalities. Research that more systematically maps this complex terrain is now required.

Gambling Involvement in Relation to Problem Gambling

In New Zealand, two forms of gambling have been consistently linked with problem gambling, namely regular gaming machine participation and betting on horse or dog races (Abbott & Volberg, 1991, 1992, 1996, 1999a, 2000). In 1999, 63 percent of clients calling the national gambling helpline said that non-casino gaming machines were their primary gambling mode. A further 14 percent mentioned casino gaming machines and 15 percent mentioned track betting. Only nine percent mentioned other forms of gambling. Forty-one percent of clients receiving counselling in New Zealand in that year

mentioned other modes, additional to the main form of gambling that they engaged in. Track betting was mentioned as an additional mode by 24 percent of clients, followed by non-casino gaming machines and casino gaming machines (both 22%) (Gruys, Hannifin & MacKinnon et al, 2000).

To date, the great majority of research examining associations between participation in particular forms of gambling and problem gambling has been essentially cross sectional. While gaming machines, track betting and some other forms of gambling have been consistently associated with problem gambling in both community and clinical studies, correlation does not establish causation. In other words, while regular involvement in these types of gambling may give rise to gambling problems, it is also possible that people become more involved in them after they have developed problems. While retrospective accounts of problem gambling development are consistent with the view that the relationship is causal, prospective longitudinal studies are required to corroborate this interpretation. Only one study of this type has been conducted to date (Abbott, Williams & Volberg, 1999). However, the size of the samples of non-problem gamblers in this study were too small and not sufficiently diverse to examine participation in continuous forms of gambling in relation to the subsequent development of problem gambling.

Although limited in the extent to which gaming machine and track betting could be examined in relation to problem gambling development among people who did not have problems at the outset of the investigation, this study did find a potentially important difference between two subgroups of problem gamblers. Specifically, problem gamblers who were primarily involved in betting on horse dog races in 1991 were found seven years later to be much less likely to have overcome their problems than were problem and probable pathological gamblers who initially favoured gaming machines**. While gaming machines appear to be the form of gambling that is most important in the development of problem gambling in New Zealand and Australia, this suggests that, relative to problems linked with track betting, gaming machine-related problems are of shorter duration.** The authors of this report cautioned that further research was required, including research with clinical samples, before it could be assumed that these findings have more general applicability. They also called for research that examines the various features of these two forms of gambling and how they relate to problem gambling development and recovery. The findings of the present study have some relevance in this regard.

A number of authorities have argued that there are features of both track betting (Solonsch, 1990) and gaming machines (Walker, 1992) that can be expected to contribute to the development of problem gambling among regular participants. Walker maintains that skill is an important factor in both. In the case of horse racing, he comments:

> There is great potential for showing skill and knowledge but that skill and knowledge is not sufficient for most gamblers to overcome the edge of the house…..most importantly, from the perspective of problem gambling, betting on races provides the opportunity for escalation in the size of the bets, chasing losses, and investing more than intended (p.90).

With respect to video poker, Walker (1992) concludes:

> Although the gambler cannot win in the long run, the element of skill may well be the basis for maintaining a belief that the gambler has an edge and money can be won. Beliefs of this kind are present in gamblers for whom video poker has become a problem. The evidence available suggests that video poker may be a greater cause of problem gambling than any other game (p.84).

In the present study, relatively few people gave responses (such as skillful or less risk/more control) that suggest that they engaged in their favourite form of gambling primarily because it involved skill. **Most of those who did favoured non-casino gaming machines, which appears to be inconsistent with the view that this form does not involve skill**. Very few mentioned track betting, a gambling activity that does apparently involve an element of skill for many regular participants. However, it should be recalled that people were only asked about their main reason for participation. Had they been asked for additional reasons for their involvement or asked directly about whether or not their play was skillful and, if so, in what ways, this matter could have been explored more thoroughly.

As mentioned in Chapter Three, with respect to gambling involvement six months prior to the Phase Two survey interviews, respondents were asked what their preferred type of gambling was. If they did not nominate a favourite gambling activity, they were asked what form of gambling they most frequently participated in. For these respondents, this most frequently engaged in activity was considered to be their preferred form. Subsequently, each respondent was asked additional questions about involvement in his or her preferred or most frequently engaged in (favourite) activity. With respect to gambling involvement five years ago and when respondents first started gambling, somewhat different questions were asked. First, they were asked to indicate all forms of gambling that they took part in at these times. They were then asked which of these was their preferred (favourite) type five years ago and when they first started gambling. Additional questions, identical to those asked with respect to gambling during the six months prior to the survey, were then presented concerning each respondent's preferred gambling activity. Thus, 'favourite' is defined somewhat differently in relation to past six months involvement than in relation to gambling involvement five years ago and when people started gambling. This means that while direct comparisons can be made between gambling participation and preferences at the time people commenced gambling and five years ago, it is not possible to directly compare involvement at these earlier times with recent involvement.

The Phase Two participants were not asked the same questions concerning past six months participation and gambling preferences as they were for their earlier gambling involvement because these questions had already been presented to them in the Phase One interview. As indicated, the nature and size of the Phase One sample means that the estimates are more precise and reliable than those obtained from the smaller Phase Two sample. In this section, Phase Two reports of gambling participation and preferences five years ago are compared with the corresponding Phase One past six months gambling and preferences findings.

During the six months prior to the Phase One survey (refer to Abbott & Volberg, 2000, Table 8), 73 percent of New Zealand adults were estimated to have taken part in Lotto. Forty-eight percent were estimated to have taken part in other lotteries or raffles, 36 percent in Instant Kiwi, 18 percent in track betting, 17 percent in TeleBingo, 17 percent in taking money bets with friends or work mates, 14 percent in non-casino gaming

machines and 11 percent in casino gaming machines. Participation estimates for other forms were less than five percent of adults.

Five years ago (refer to Table 22), 71 percent of adults who reported having ever gambled (94% of adults) were estimated to have taken part in Lotto. Findings for the other types of gambling mentioned in the preceding paragraph are: other lotteries and raffles (37%), Instant Kiwi (27%), track betting (21%), TeleBingo (3%), money bets with friends or work mates (2%), non-casino gaming machines (5%) and casino gaming machines (5%). As for past six months participation, participation estimates for all remaining forms were less than five percent.

At face value, the participation estimates for the six months prior to the Phase One survey and five years ago suggest that involvement in most forms of gambling has increased, in some instances considerably. However, it is important to note that the current estimates have a six months timeframe. A similar six months timeframe was not provided in the question that asked about involvement five years ago and it is not clear what threshold respondents used when deciding to include or exclude particular forms of gambling. To do so would have presented difficulties given that people were reporting on behaviour that took place five years ago. Retrospective accounts, even without this additional demand, are likely to contain significant recall and reporting errors. Different results may well have been obtained if participants had actually been interviewed five years ago. At best, the comparisons may be regarded as suggestive. At worst, they may be invalid and misleading. More adequate indications of change in gambling participation over time are provided by comparing relevant findings from the first phases of both the 1991 (Abbott & Volberg, 1991; 1996) and 1999 national surveys (Abbott & Volberg, 2000) and the first and second stages of the 1998 longitudinal survey (Abbott, Williams & Volberg, 1999).

McCown and Chamberlain (2000) outline five processes that they maintain are 'gateways' to problem gambling. These processes are as follows:

1. Physiological changes associated with gambling are initially interpreted positively
2. Participants come under the influence of a variable ratio of reinforcement
3. A 'big win' is experienced
4. Participants believe that they have substantial control over gambling outcomes
5. Participants believe in luck or magic.

Interpreting physiological and emotional reactions to gambling positively is deemed to be important because it increases the reward value of gambling involvement. This can come about in various ways. For example, for some people gambling can be particularly rewarding because it serves as a distraction and reduces anxiety or depression. For others, it may be perceived as exciting or offering the prospect of considerable financial gain. The findings outlined concerning respondent reasons for gambling illustrate that a variety of additional factors also play a role in making gambling attractive and that these factors vary from person to person and from one type of gambling to another.

A large body of psychological research shows that humans and other animal species persist with particular behaviours when they cannot predict how often they are required to respond before they will be rewarded ('reinforced'). Sequences of rewards that occur

intermittently have this characteristic. Most forms of continuous gambling involve what are referred to as variable ratios of reinforcement. Gaming machines are programmed to ensure that both the delivery of rewards and the size of rewards are highly unpredictable. Indeed, for this reason, they are often described in psychology textbooks to illustrate the effects of variable ratio reinforcement on behaviour. Although gaming machines provide a classic example of this type of intermittent reinforcement, track betting outcomes are of a similar nature, albeit that they are more spread out and involve less repetitions during a given period of time.

Although variable ratios of reinforcement are very effective in maintaining future responding when rewards are absent or rare, they are difficult to establish. However, the experience of a large reward early on has been demonstrated to assist in establishing new behaviours and habits. It is for this reason that 'big wins' are considered to be important in the development of problem gambling. Both track betting and gaming machine participation offer opportunities for winning large sums of money. While the sums involved are generally considerably smaller than those associated with national and other large lotteries, the probability of winning moderately large sums is much greater.

There is evidence consistent with the hypothesis that a perception of control or partial control over gambling outcomes increases the likelihood of problem gambling (Friedland, Keinan & Regev, 1992). It is reasonable to expect that this type of belief is more readily fostered by regular involvement in forms of gambling that actually involve an element of skill. Track betting, as discussed, is in this category. While there is also a slight element of actual skill involved in playing some gaming machines, some regular gamblers and many problem gamblers who favour this form of gambling appear to have an exaggerated or distorted perception of control over machine outcomes (Abbott & Volberg, 1999a; McCown & Chamberlain, 2000; Walker, 1992).

McCown and Chamberlain (2000) also maintain that people are at greater risk for the development of problem gambling if they believe in luck or fate and that they are more likely to win if they feel lucky or are on a 'winning streak'. A variety of superstitious behaviours and thoughts have been observed among problem gamblers undergoing treatment that are in this category (McCown & Keiser, 2000).

The five 'gateways' to problem gambling may all be regarded as helping to explain how regular patterns of gambling participation are established and maintained when large losses are incurred. In the case of people who are developing gambling problems, as well as among people with established problems, losses are typically magnified through 'chasing' - the continuation of gambling in the face of large losses in an attempt to win back money that has been lost. Some of the 'gateway' processes may also play a part in chasing, for example a belief in luck or an exaggerated belief in being able to control outcomes.

In the present study, while casino gambling usually involved longer typical gambling sessions and higher losses per session than other forms, track betting and gaming machine participation were close behind and, in contrast to casino gaming, sessions were much more frequent. This greater frequency and the fact that more people take part in them regularly than is the case for casino gaming, may help to explain why most problem gamblers in New Zealand are primarily involved in one or both of these types of gambling.

The different characteristics of track betting and gaming machine participation may also have some relevance to Abbott, Williams and Volberg's (1999) finding that problem gamblers who favoured betting on horse or dog races had a worse long-term outcome than those who favoured gaming machines. Winning money and entertainment were the main reasons given taking part in non-casino gaming machines. The reasons given for involvement in track betting (entertainment, interested, socialising) are more diverse and money is not reported as an important factor. With regard to socialising, it should also be noted that 74 percent of track betters said they usually took part with other people compared to 58 percent of non-casino gaming machine gamblers. The wider motivational base of track betting and the extent to which it is embedded in family and wider social relationships may be important factors in explaining its persistence and the persistence of associated problems. It may be more difficult to find substitute activities and meaning for betting on horse or dog races than for gaming machine participation. This matter will be considered further shortly.

4.4 Gambling Participation in Adult New Zealanders' Families of Origin, Present Families, Friendship Networks and Work Settings

In the present study, participants were asked about gambling in the family that they grew up in and in their present family, among their friends and where they work. Perhaps the most notable finding was that substantially more people gambled within their present family than had gambled in their family of origin. However, as noted in Chapter Three, although more gambled in their present family than in their family of origin, the great majority of these people did so only a little. Less gambled a moderate amount or a lot than had done so in their families of origin. **While caution is required in interpreting retrospective accounts of past behaviour, this suggests that although considerably more families gamble today than was the case previously, fewer do so frequently. This is a potentially important finding as it appears to contradict the notion that increased overall gambling involvement within society leads to a disproportionate increase in the number of people who gamble a lot.** Unfortunately, there is no way to directly verify this finding, although historical investigation may shed some light on it. However, it is consistent with the additional finding that adults aged 35 years and over more often reported both non-gambling and moderate to heavy gambling in their families of origin than those aged under 35 years.

As mentioned in Chapter Three, these findings are also consistent with the view that younger adults grew up with considerably more gambling in their households than older adults did. However, the younger adults did not report that this was repeated in their current families. To the contrary, they reported much lower levels of moderate and heavy gambling. The findings suggest that there is discontinuity across generations with respect to familial gambling participation patterns. This further implies that external socialising agents play a significant role in the development of gambling behaviour.

As predicted, problem gamblers reported much higher levels of moderate to heavy gambling in their families of origin than the non-problem gamblers. This is consistent with the view that family socialisation plays some part in the

development of problem gambling. Again, as expected, problem gamblers reported more gambling in their present family and among their friends.

With respect to the sociodemographic variables considered in relation to familial gambling patterns, the greatest differences were between ethnic groups. Whereas very few Europeans and no people of 'other ethnicities' reported that there was a lot of gambling in their families of origins, over a third of Māori said that there was. While few Māori mentioned that their present family gambled a lot, considerably more than in the other two groups said that they gambled a moderate amount. These findings are consistent with the higher prevalence of problem gambling among Māori.

The 'other ethnicities' group is of interest in that again a bimodal distribution was evident. Nearly two-thirds reported that there was no gambling in their families of origin and a third said there was a moderate amount. Very few indicated that there was a little or a lot of gambling. However, a very different pattern was reported for their current families. Eighty-six percent were estimated to have gambled a little and 13 percent to have gambled a moderate amount or a lot. This suggests that there has been a substantial increase in the percentage that gamble. Indeed, none of the 'other ethnicities' respondents indicated that there was no gambling in their present family. However, although there appears to have been a marked increase in those who gamble, considerably less were estimated to gamble a moderate amount or a lot. Whereas gambling in their families of origin was markedly different from the patterns for Māori and Europeans, the pattern for their present families was more like that for Europeans. It differed in that somewhat less did not gamble at all and somewhat more said they gambled a moderate amount or a lot.

In contrast to Māori and the 'other' ethnic groups, Europeans showed much greater consistency between their families of origin and present family. The major changes were a moderate reduction in the percentage that estimated to not gamble at all and a moderate increase in the percentage estimated to gamble a little. Given the much larger European sample, greater confidence can be accorded these findings than those for the other two ethnic categories which must be treated with considerable caution. They are reported here because they raise questions that warrant further study.

4.5 Retrospective Accounts of Changes in Gambling Participation and Problem Gambling over Time and Factors that may Influence these Changes

Age at which People Commence Gambling

Although the average age at which people said they started gambling was 20 years, in Chapter Three information was presented showing that there was considerable variation and that this variation was associated with gambling status, gender, age and ethnicity.

As in Phase One of the NPS (Abbott & Volberg, 2000) and the 1991 Phase Two study (Abbott & Volberg, 1992), problem gamblers somewhat more often reported commencing gambling during their childhood or early teens. However, while commencing gambling at an early age appears to be a risk factor for problem gambling, people who currently reported gambling infrequently also more often said they started

gambling at a younger age than people who currently gambled on a regular basis. This finding does not appear to have emerged in previous studies and requires further investigation.

Although relatively more problem than non-problem gamblers commenced gambling prior to their mid teens, the majority started later, including more than a third that began at the age of 20 years or older. **Thus, while problem gambling is somewhat more likely to occur among people who begin gambling early in life, it also occurs among people who begin during their later adolescent and adult years.**

Males and females differed little with respect to the proportion estimated to have first gambled prior to the age of 15 years. However, somewhat more males said they did so during their mid to late teens and somewhat less reported likewise at the age of 30 years or older.

Europeans were most likely to report commencing gambling during their mid to late teens. In contrast, Māori appeared to have a bimodal distribution, with relatively large numbers in both the younger than ten years and 30 years or older categories. Most people of other ethnicities first gambled between the ages of 20 to 29 years and very few started before the age of ten years or at the age of 30 years or more.

Other than a tendency for relatively more younger adults to have started gambling before the age of ten years and relatively more older adults to have started at the age of 30 years or older, there was little difference between these two groups. This suggests that while there has been considerable continuity over time with respect to the age at which people start gambling, during the last 25 or so years somewhat more people appear to have commenced gambling during childhood than was the case in earlier times. However, as with the other findings discussed here that involve respondent recall of past events, there is considerable potential for memory distortion and inaccuracy. More definitive information can be obtained by surveying the gambling behaviour of children and adolescents and examining change over time by reassessing the same people as they age, or by conducting repeat cross sectional surveys. To date, comprehensive studies of this type have not been conducted in New Zealand and very little is known about the development of children's gambling and how it relates to gambling and problem gambling during adolescence and adulthood.

Given the apparent differences noted between ethnic groups, it will be important to examine ethnicity and other sociodemographic variables in relation to children's gambling and its development and change during maturation. It is also important that the present ethnic findings are examined further using larger samples as they may be unreliable.

Relationships between Age First Gambled and Current Gambling Preferences

One of the many matters of interest in relation to the age at which people commence gambling is whether or not this influences subsequent gambling behaviour. Examining relationships between the age at which people said that they began gambling and their current gambling preferences provided preliminary information of this type.

In Chapter Three it was reported that 60 percent of people who currently preferred betting on horse or dog races were estimated to have begun gambling before the age of 15 years. In the case of other gambling preferences, over a half of people were estimated to have first gambled at the age of 15 years or older. It would be of interest to see which form of gambling people who favoured track betting were first introduced to during their childhood and early teens.

A relatively large number of people who currently preferred other lotteries or raffles also reported starting gambling before the age of 15 years. In contrast to those who preferred track betting or other lotteries and raffles, the majority who currently favoured non-casino gaming machines did not commence gambling until the age of 20 years or older. Machines are confined to venues that have age restrictions. Again, it would be of interest to determine what form of gambling they first participated in. The difference between people who currently prefer non-casino gaming machines and people who prefer track betting may be of some relevance to the finding discussed earlier concerning the different outcomes of problem gamblers with different gambling preferences and involvement. It will be recalled that problem gamblers with a preference for gaming machines had a better outcome than problem gamblers with a preference for betting on horse or dog races. Perhaps part of the explanation is that the latter group has, on average, a much longer history of gambling involvement, including involvement in their preferred gambling form.

How People were Introduced to Gambling

Respondents also provided information on who or what first introduced them to gambling. Given the considerable passage of time since this experience occurred for many people, it was expected that a substantial number would not be able to provide this information. Contrary to expectation, the large majority did respond. As explained in Chapter Three, respondents were asked an open-ended question and their responses were subsequently categorised by the investigators.

With regard to categories of people, family members were mentioned most often in this regard, followed by friends. Small numbers referred to workmates or spouses/partners. Raffles were mentioned quite often as the way in which people were first introduced to gambling. Advertising was also mentioned. Small numbers of people gave a wide variety of other explanations. As discussed in relation to age first gambled, this information must be treated with considerable caution and regarded as a poor substitute for research involving children, adolescents and adults closer to the time when the experiences under investigation occur. It would be of interest to examine how people are introduced to particular types of gambling and whether or not the way in which people are introduced to gambling influences their subsequent gambling and problem gambling behaviour.

In comparison to non-problem gamblers, problem gamblers almost twice as often said that they had first been introduced to gambling by their family. This is consistent with the finding already discussed concerning higher reported levels of gambling involvement in their families of origin. Further research could usefully focus on how gambling and problem gambling on the part of family members influences problem gambling development and evaluating interventions that might help to prevent the subsequent development of problems.

Men, more often than women, indicated that they had been introduced to gambling by friends. As with other findings discussed to this point, substantial ethnic differences were found. People of 'other' ethnicities indicated much less often than Europeans or Māori that they had been introduced to gambling by their families. In contrast to Europeans and Māori, they much more often reported advertising and the desire to win money in this regard. This suggests that external socialising agencies are more important for this group than the family. This is consistent with the finding of low levels of gambling involvement within people of other ethnicities' families or origin. However, as with all of the findings reported for the non-European groups, these findings must be regarded as tentative subject to further examination involving larger samples.

Gambling Activities Engaged in and Favourite Gambling Activities when People First Started Gambling

A half of people were estimated to have participated in other lotteries and raffles when they first started gambling. Nearly a third engaged in betting on horse or dog races at this time and a just under a quarter participated in Lotto. The only other forms participated in by more than ten percent of people were Instant Kiwi and non-casino gaming machines. Lotto was introduced in 1987 and non-casino gaming machines were licensed in 1988.

The 1991 Phase Two survey (Abbott & Volberg, 1992) also found that lotteries and raffles and track betting were most often mentioned at the time when people first commenced gambling. In contrast to the findings of the present study, however, card games were mentioned much more often in 1991. Instant Kiwi and gaming machines, which had only been introduced or licensed a few years before the 1991 survey, were mentioned less often. These findings suggest that card games have, over time, become less important in introducing people to gambling. However, this is uncertain as the 1991 Phase Two sample did not include infrequent gamblers and the data were not weighted.

A somewhat similar pattern to that found for participation emerged with respect to the forms of gambling that were reported as having been preferred when respondents first started gambling. In the present survey, other lotteries and raffles (27%) and betting on horse or dog races (22%) were again mentioned most often, followed by Lotto (14%), Instant Kiwi (8%) and non-casino gaming machines (7%).

Forty-two percent of problem gamblers were estimated to have first taken part in betting on horse or dog races, a somewhat higher percentage than for people in the two non-problem groups. Lower percentages of problem gamblers first participated in Lotto, other lotteries and raffles and Instant Kiwi. **Although betting on horse and dog races was most often mentioned by problem gamblers, the forms of participation that most clearly differentiated the problem and non-problem groups were playing card games for money and housie.** Problem gamblers had much higher levels of participation in these types of gambling. They also had somewhat more involvement in non-casino gaming machines. **With regard to the preferred form of gambling at this time, playing card games for money most clearly differentiated the problem and non-problem groups.** Much lower percentages of problem gamblers reported that Lotto or other lotteries or raffles were their favourite forms of gambling.

In Phase Two of the 1991 national survey (Abbott & Volberg, 1992) interviewer-determined probable pathological gamblers also had somewhat higher levels of participation in track betting at the time they first started gambling than non-problem gamblers. This was especially so for probable pathological gamblers aged less than 30 years. As in the present study, the 1991 probable pathological gamblers also reported greater involvement in card games and less involvement in lotteries and raffles. In contrast to the findings of the present study, the probable pathological and non-problem groups did not differ with respect to housie participation in 1991. In addition, in 1991, the difference in non-casino gaming machine involvement between the probable pathological and non-problem groups was greater than in the present study. Examination of data in Table 17 of the present report suggests that this latter difference may be due, in large part, to the omission of infrequent gamblers from the 1991 study.

It will be recalled that comparison of 1991 and 1999 Phase Two survey findings must be treated with caution owing to differences in the composition of their samples and the unweighted nature of the 1991 data set. **Despite these differences, both studies indicate that at the outset of their gambling careers, problem gamblers have higher levels of involvement than non-problem gamblers in a number of continuous forms of gambling**.

In Chapter Three it was evident that, at the time they commenced gambling, males were estimated to have a higher level of involvement than females in betting on horse or dog races and betting on card games. Females, on the other hand, were estimated to have higher levels of involvement in non-casino gaming machines and other lotteries and raffles. **This finding again points to the role of gaming machines in introducing females to gambling. Gambling <u>preferences</u> were consistent with these gender participation differences.**

The initial gambling participation and preferences of younger and older adults in part reflected the availability of gambling forms at the time they commenced gambling. The majority of adults under the age of 35 years indicated that they first took part in Lotto or Instant Kiwi. Both of these gambling activities were introduced during the late 1980s. Somewhat more older than younger adults first participated in betting on horse or dog races. Adults aged 35 years and older more often said they took part in other lotteries and raffles, card games and housie. **It is of interest that similar numbers of younger and older people first participated in non-casino gaming machines, suggesting that a number of the older adults were introduced to gambling by this type of gambling during their adult years. As mentioned earlier, gaming machines were not readily available until the late 1980s.**

Non-casino gaming machine, Lotto and Instant Kiwi participation appear to have been much more common among Māori and people of other ethnicities. Māori more often than Europeans and members of other ethnic groups took part in housie and 'other' forms of gambling and indicated that non-casino gaming machines were their favourite form of gambling when they first started gambling. They less often bet on horse or dog races or indicated that this was their favourite type of gambling at this time. For over a third of people of other ethnicities, track betting was their favourite form when they first started gambling. Relationships between early participation in different forms of gambling and the development of problem gambling within ethnic groups require further study. **It may be that non-casino gaming machine involvement and housie are**

particularly important for Māori whereas track betting may be important in this regard for Pacific Islanders and perhaps some other minority ethnic groups.

Most people who reported gambling before the age of 15 years first gambled on other lotteries and raffles and preferred this type of gambling at that time. Non-casino gaming machines participation was mentioned next most often by people who commenced gambling before the age of ten years and betting on horse or dog races was mentioned next most often by people who commenced gambling between the ages of ten and 15 years. These were also the forms that these groups next most often preferred. These findings were unexpected given that both forms have age restrictions and are strongly associated, in adults, with problem gambling[1]. This is a potentially important finding from a social policy perspective. Betting on horse or dog races was the form most often mentioned and reported as the favourite by people who started gambling between the ages of 20 and 29 years. A significant minority of people who first reported gambling as adults also said that they played non-casino gaming machines at this time. Thus, both gaming machines and track betting appear to have had a role in introducing a number of adults to gambling who had not previously participated.

Other Aspects of People's Gambling when they First Started Gambling

Earlier it was noted that problem gamblers reported more often than non-problem gamblers that they both participated in and preferred continuous forms of gambling at the time they started gambling. In addition, from the outset, they also reported more frequent participation in their favourite form, substantially higher expenditure and longer typical session lengths. These findings suggest that in contrast to people who do not subsequently develop problems, people who do develop problems have a much higher level of engagement in gambling from the time they first start to gamble. Furthermore, this engagement is predominantly in forms that are associated with problem gambling in adults. In Chapter Three it was also evident that problem gamblers more often gambled with other family members or work-mates at this time and that they less often gambled alone.

In the 1991 Phase Two survey (Abbott & Volberg, 1992) it was also found that interviewer-determined probable pathological gamblers reported greater and more frequent participation in continuous forms of gambling, higher expenditure and longer sessions.

While frequent early involvement with continuous and partially skill-based gambling activities could be expected to increase the probability of developing gambling problems, further research is required to determine why people who subsequently develop problems so rapidly acquire regular patterns of high intensity gambling involving these forms**. It is likely that family involvement in and attitudes towards gambling play a role. However, psychological, physiological and other socialisation agents can also be expected to be significant in this regard.** The identification of these determinants could assist in the development of prevention and early intervention programmes for people at risk for problem gambling.

[1] Strictly speaking, gaming machines are located in venues that have age restrictions on entry.

Some sociodemographic factors, most notably male gender and non-European ethnicity, were also found to be associated with higher degrees of early involvement in forms of gambling that are associated with problem gambling and that were favoured by problem gamblers when they first started gambling. As mentioned earlier, males, Māori and Pacific islanders have higher rates of lifetime problem gambling as adults. Thus, these and other sociodemographic variables appear to in part account for the initial, high rates of gambling engagement. Research is required to determine the extent to which ethnicity per se rather than other factors associated with ethnic identity are significant in this regard.

Gaming Activities Engaged in Five Years Ago Compared with the Time when People First Reported Gambling

Whereas just under a quarter of people were estimated to have participated in Lotto when they first started gambling, 71 percent were estimated to do so five years ago. Instant Kiwi was engaged in more often (27%) than it was when people first gambled (15%). In the case of older participants, Lotto and Instant Kiwi were not available when many of them started gambling. Other lotteries and raffles, which ranked first when people began gambling (50%) received second ranking (37%) with respect to gambling five years ago. Track betting similarly reduced somewhat in participation frequency, from 33 percent to 21 percent. In contrast to Lotto and Instant Kiwi, these two forms of gambling have been readily available throughout the lifetimes of all participants.

Non-casino gaming machines and playing card games for money were the only other gambling activities that five percent or more of participants were estimated to have participated in at the time they started gambling. Reported participation in non-casino gaming machines reduced from 11 percent to five percent and card games from eight percent to three percent. Non-casino gaming machines were also introduced during the 1980s and the finding of reduced involvement contrasts with the increase noted for Lotto and Instant Kiwi. Given their relatively recent introduction, age restrictions on access to premises with gaming machines and respondent reports that most of them first gambled during childhood or adolescence, it was expected that more people would play gaming machines five years ago than did so at the outset of their gambling 'careers'. **The finding of decreased participation suggests that involvement in this type of gambling is transitory for many people and likely to be related to social activities.**

Increased Lotto and Instant Kiwi participation and decreased participation in other lotteries and raffles and playing card games for money was reported by all three gambling participation groups - lifetime problem gamblers, regular gamblers and infrequent gamblers. In contrast, both track betting and non-casino gaming machine participation increased for problem gamblers but decreased for the two non-problem groups. Problem gamblers also differed from non-problem gamblers in that relatively more people with problems said they participated in casino gaming machines and other casino games five years ago. These forms of gambling were rarely mentioned at the time people first started gambling, probably because the first casino didn't open in New Zealand until 1994.

At the time people first started gambling, of the forms of gambling estimated to have been engaged in by five percent or more people, males more often took part in betting

on horse or dog races and playing card games for money. Females more often participated in other lotteries and raffles and non-casino gaming machines. Participation in other forms differed relatively little. From participant descriptions of their gambling five years ago, the difference between males and females with respect to track betting and card games were no longer evident. Females continued to report higher levels of involvement in other lotteries and raffles and non-casino gaming machines, although both males and females reported substantially lower levels of involvement in this latter form.

These gender findings are consistent with the view that gender differences with respect to involvement in particular forms of gambling have diminished and that non-casino gaming machines have played a role in introducing women to a form of gambling that is associated with problem gambling.

As mentioned earlier, younger adults much more often than older adults said that they took part in Lotto and Instant Kiwi when they first started gambling. It was also mentioned that the main reason for this difference was likely to be their unavailability when the majority of older adults began gambling. Reports of gambling five years ago indicated a reversal with respect to Lotto participation, with older adults reporting higher involvement. This reflects the wide appeal of Lotto since its introduction. Younger adults, however, continued to report a somewhat higher rate of participation in Instant Kiwi. Younger adults also continued to report much lower rates of involvement in other lotteries and raffles than older adults.

Apart from playing card games for money, that were participated in more often by older adults, there was little difference in participation for younger and older adults at the time they first started gambling. Similarly, with respect to reports on gambling participation five years ago, there was little difference between those forms participated in by five percent or more people, namely betting on horse or dog races and non-casino gaming machines. In the case of playing card games for money, fewer people were estimated to have participated five years ago (3%) than at the time they started gambling (8%). However, of those who did participate five years ago, younger adults now outnumbered older adults.

The findings pertaining to playing cards for money suggest that both cohort and age effects are operating. In other words, while older adults were more likely than younger adults to take part in this form of gambling when they started gambling, most stopped as they aged. Although fewer younger adults initially took part, they outnumbered older adults five years ago because they were chronologically younger and had not yet stopped engaging in this form of gambling. However, as mentioned earlier, while this pattern may also pertain to problem gamblers, a significant minority of problem gamblers continued to take part in this type of gambling as adults.

Some large differences were noted earlier with respect to ethnicity and gambling participation when people first commenced gambling. Māori and people of other ethnicities were estimated to have much higher levels of involvement in Lotto, Instant Kiwi and non-casino gaming machines than Europeans at that time. Māori reported lower levels of participation in track betting and higher levels in housie and other (non-specified) forms of gambling than people in the other two ethnic categories. Europeans reported higher rates of playing card games for money. People of other ethnicities reported lower participation than Māori and Europeans in other lotteries and raffles.

Given that some of these participation differences are also evident in relation to age, and that Māori and people of other ethnicities, on average, are younger than Europeans, it is likely that they are in part due to age rather than factors relating more directly to ethnic identity. If the sample was larger and had been drawn more directly from the general adult population, it would have been possible to conduct multivariate analyses to help clarify the relative importance of different sociodemographic variables in this regard. Some modeling of this type was undertaken with respect to current gambling participation in Phase One of the NPS (Abbott & Volberg, 2000).

With regard to reported Lotto, Instant Kiwi and non-casino gaming machine participation five years ago, the ethnic participation differences noted at the time people first started gambling were reversed. Europeans, five years ago, generally had higher levels of participation in these activities. With regard to track betting five years ago, people of other ethnicities continued to have a high level of involvement and Māori continued to report a lower level. Europeans, however, reported lower participation than at the time they started gambling and, with respect to participation five years ago, Europeans and Māori no longer differed.

Relative to Europeans and people of other ethnicities, Māori continued to report higher levels of participation five years ago in housie and other (non-specified) forms of gambling. Whereas Europeans reported greater involvement in card games than people in the other ethnic categories when they first started gambling, Māori reported a higher rate of participation five years ago. As with gambling participation at the time they started gambling, people of other ethnicities reported very low levels of involvement in other lotteries and raffles. The difference was apparently greater than in the more distant past.

Although reported participation rates in casino gambling were higher five years ago than at the time people started gambling, they remained low (5% for casino gaming machines and 3% for other casino games). The most notable finding was that people of other ethnicities reported a higher level of participation in casino gaming machines (11%) than Māori or Europeans. However, these findings require further exploration using larger samples and may not be reliable.

In conclusion, with respect to ethnicity, there appear to be both continuities and discontinuities with respect to gambling participation from the time people started gambling up until five years ago. At this stage, it is unclear why groups sometimes reported similar types of involvement and sometimes reported substantial changes. Further research is required to examine in a more focused way how gambling participation patterns develop within different ethnic groups and what the implications, both positive and negative, of this are for individuals and communities.

Initial gambling involvement was also examined in relation to the age at which people said they first took part in gambling activities. As indicated previously, people who started gambling before the age of 15 years more often said that they initially took part in other lotteries and raffles and, especially in the case of those who started before the age of ten, non-casino gaming machines. A moderately large number who started between the ages of ten to 14 years said they bet on horse or dog races at that time. Although people who first commenced gambling at the age of 15 years or older generally said they most often took part in other lotteries or raffles, track betting, Lotto and Instant Kiwi were

also quite often mentioned. In contrast to people who started gambling between the age of 15 years and 20 years, people who did not begin gambling until the age of 30 years or more relatively more often mentioned other lotteries and raffles and gaming machines. They relatively less often referred to Instant Kiwi, track betting or card games for money.

With regard to gambling participation five years ago, all 'age' groups reported higher levels of involvement in Lotto than in other forms. However, the group that reported the lowest participation at the time they started gambling (those who first gambled before the age of 10 years) continued to report a relatively low level of involvement five years ago. Surprisingly, the group that initially reported the highest level of participation (those who first gambled at the age of 30 years or older) also had a relatively low level of involvement five years ago.

The 'oldest' and 'youngest' groups reported the lowest level of participation in Instant Kiwi, both when they commenced gambling and five years ago. It is of interest that with respect to Lotto and Instant Kiwi involvement, people who started gambling before the age of ten years continued to have relatively less involvement. However, the reason for this is not readily apparent.

In contrast to the situation with Instant Kiwi, although a significant minority of people who first gambled before the age of ten years (29%) were estimated to have played non-casino gaming machines when they started gambling, relatively few (4%) did so five years ago. A high rate of 'attrition' for this type of gambling was also apparent for the group that first gambled between the ages of ten to 14 years (14% versus I%). However, relative to the other 'age' groups, this group reported a higher level of casino gaming machine involvement (10%) five years ago. Participation changes with respect to non-casino gaming machines varied for the other groups. It increased slightly in the group that started gambling between the ages of 15 to 19 years, reduced somewhat in the group that started gambling between the ages of 20 to 29 years and reduced appreciably in the group that started gambling at the age of 30 years or older. The reason for this complex pattern of results is unclear, as is the reason why, overall, participation in this gambling activity reduced so markedly overall (from 11% to 5%) when access was limited at the time when most people first begin gambling.

A third of people were estimated to have bet on horse or dog races when they first started gambling compared to a fifth five years ago. Much lower percentages of people who reported first gambling before the age of ten years or at the age of 30 years or older were estimated to have participated in this form of gambling when they first started gambling. However, with respect to reported participation five years ago, in contrast to the situation with non-casino gaming machines, both groups reported increased participation. The other three groups reported decreases. The only group in which this decrease was substantial was the group that first commenced gambling between the ages of 15 and 19 years.

Gambling Activities Engaged in at the Time the Survey was Conducted Compared with Five Years Ago

Given the interest in the NPS in changes in gambling participation during the past decade, comparison of reports of gambling participation five years ago with reports of current participation are of particular relevance.

As mentioned in Chapter Three, with respect to gambling involvement six months prior to the Phase Two survey interviews, respondents were asked what their preferred type of gambling was. If they did not nominate a preferred gambling activity, they were asked what form of gambling they most frequently participated in. For these respondents, this most frequently engaged in activity was considered to be their preferred form. Subsequently, each respondent was asked additional questions about involvement in his or her preferred or most frequently engaged in (favourite) activity. With respect to gambling involvement five years ago and when respondents first started gambling, somewhat different questions were asked. First, they were asked to indicate all forms of gambling that they took part in at these times. They were then asked which of these was their preferred type five years ago and when they first started gambling. Additional questions, identical to those asked with respect to gambling during the six months prior to the survey, were then presented concerning each respondent's preferred gambling activity. Thus, 'favourite' is defined somewhat differently in relation to past six months involvement than in relation to gambling involvement five years ago and when people started gambling. This means that while direct comparisons can be made between gambling participation and preferences at the time people commenced gambling and five years ago, it is not possible to directly compare involvement at these earlier times with recent involvement.

The Phase Two participants were not asked the same questions concerning past six months participation and gambling preferences as they were for their earlier gambling involvement because these questions had already been presented to them in the Phase One interview. As indicated, the nature and size of the Phase One sample means that the estimates are more precise and reliable than those obtained from the smaller Phase Two sample. In this section, Phase Two reports of gambling participation and preferences five years ago are compared with the corresponding Phase One past six months gambling and preferences findings.

During the six months prior to the Phase One survey (refer to Abbott & Volberg, 2000, Table 8), 73 percent of New Zealand adults were estimated to have taken part in Lotto. Forty-eight percent were estimated to have taken part in other lotteries or raffles, 36 percent in Instant Kiwi, 18 percent in track betting, 17 percent in TeleBingo, 17 percent in taking money bets with friends or work mates, 14 percent in non-casino gaming machines and 11 percent in casino gaming machines. Participation estimates for other forms were less than five percent of adults.

Five years ago (refer to Table 22), 71 percent of adults who reported having ever gambled (94% of adults) were estimated to have taken part in Lotto. Findings for the other types of gambling mentioned in the preceding paragraph are: other lotteries and raffles (37%), Instant Kiwi (27%), track betting (21%), TeleBingo (3%), money bets with friends or work mates (2%), non-casino gaming machines (5%) and casino gaming machines (5%). As for past six months participation, participation estimates for all remaining forms were less than five percent.

At face value, the participation estimates for the six months prior to the Phase One survey and five years ago suggest that involvement in most forms of gambling has increased, in some instances considerably. However, it is important to note that the current estimates have a six months timeframe. A similar six months timeframe was not provided in the question that asked about involvement five years ago and it is not clear

what threshold respondents used when deciding to include or exclude particular forms of gambling. To do so would have presented difficulties given than people were reporting on behaviour that took place five years ago. Retrospective accounts, even without this additional demand, are likely to contain significant recall and reporting errors. This is illustrated by the fact that a small number of respondents mentioned TeleBingo involvement five years ago. TeleBingo was not available at that time, but was introduced in 1996. Different results may well have been obtained if participants had actually been interviewed five years ago. At best, the comparisons may be regarded as suggestive. At worst, they may be invalid and misleading. More adequate indications of changes in gambling participation over time are provided by comparing relevant findings from the first phases of both the 1991 (Abbott & Volberg, 1991; 1996) and 1999 national surveys (Abbott & Volberg, 2000) and the first and second stages of the 1998 longitudinal survey (Abbott, Williams & Volberg, 1999).

Phase One of both the 1991 (Abbott & Volberg, 1991; 1996) and 1999 (Abbott & Volberg, 2000) national surveys examined lifetime, past six months and weekly or more often participation in forms of gambling that were available in New Zealand when these studies were conducted. With respect to forms available at the time both studies were undertaken, reductions were evident for most forms of gambling, especially with respect to weekly or more frequent participation. Weekly participation in both Instant Kiwi and other lotteries and raffles more than halved from 1991 to 1999. Of the forms of gambling introduced since 1991, TeleBingo was the only one that a significant number of people (6%) reported taking part in on a regular (weekly or more often) basis. However, both casino and non-casino gaming machine participation exceeded ten percent during the six month period prior to the 1999 survey. Track betting and housie evidenced little or no change from 1991 to 1999.

In the NZGS longitudinal survey (Abbott, Williams & Volberg, 1999), probable pathological, problem, regular continuous and regular non-continuous gamblers who had first been assessed in 1991 (Abbott & Volberg, 1991; 1992) were reassessed seven years later. It was found that frequent Instant Kiwi participation reduced markedly across all groups and that frequent non-casino gaming machine participation reduced significantly for both 1991 lifetime problem and probable pathological gamblers. Although frequent participation in these forms of gambling reduced, a number of participants reported that they regularly took part in forms of gambling introduced subsequent to the 1991 baseline survey, especially TeleBingo, casino gaming (which included casino gaming machines) and Daily Keno.

The findings summarised in the two previous paragraphs present a different picture to that obtained by comparing the 1999 Phase One and 1999 Phase Two retrospective data.

Given the inconsistency between the 1999 Phase One past six months and Phase Two five years ago gambling participation comparisons and the participation changes evident from the 1991 and 1999 Phase One surveys and the 1998 longitudinal survey, it is concluded that the former comparisons are probably not accurate. This was discussed earlier where problems with retrospective recall and different time-frames for questions were mentioned. For this reason, subgroup participation findings are not considered here. However, in contrast to the situation for gambling participation, comparison of the 1999 Phase One past six months and Phase Two five years ago gambling preferences could be expected to be more accurate.

Early Gambling Preferences in Relation to Subsequent Gambling Preferences

The previous sections examined changes in gambling preferences and participation. The points of time considered were when participants first started gambling, five years ago and the present. As mentioned previously, change over time can be more adequately investigated by prospective investigation. The method used in the present study, namely retrospective accounts of past behaviour and experience, while providing relevant information, is prone to inaccuracies in recall and reporting.

One way in which the matter of change over time was addressed in the present study involved examination of past preferences in relation to current preferences. While confining attention to the preferred form omits information about other gambling activities that people take part in, this approach does provide a clearer picture of how past preferences relate to future preferences. The relatively small size of the sample limited the consideration of preferences to people who had no preference and those who most preferred Lotto, other lotteries and raffles, non-casino gaming machines, betting on horse or dog races and other gambling activities.

A high degree of change in gambling preferences was found over the longer time period, i.e. from the time people first started gambling to the present. Approximately two-thirds reported that their favourite form of gambling had changed. Considerably less, approximately a third, reported a change in preference during the shorter five-year period.

Lotto preferences displayed a high degree of stability over time in that the large majority of people who indicated that this was their favourite form when they first started gambling also preferred Lotto currently. Lotto was of further interest in that substantial numbers of people who initially expressed other preferences currently said that Lotto was their favourite. Other than people who initially said that non-casino gaming machines were their favourite form, substantial numbers who preferred other forms subsequently switched to Lotto. In contrast to people who initially favoured Lotto, the majority of people who had an early preference for non-casino gaming machines subsequently developed a preference for some other form, predominantly those in the residual 'other' category. Most of these are continuous forms, including those such as casino gaming activities that have been recently introduced.

Although most people who reported an initial preference for track betting latter shifted their preference, most often to Lotto or 'other' activities, the large majority of people who said that track betting was their current favourite had not previously preferred another form. A similar pattern of results was evident for people who initially preferred other lotteries/raffles. These findings are of interest in that they contrast with those for the other three forms of gambling. In the case of other forms examined, the majority of people who prefer them had previously preferred another form**. It appears that relatively few people who establish preferences for other types of gambling later develop a preference for betting on horse or dog races or other lotteries/raffles and that most people with these preferences have sustained them from the time when they first started gambling.**

It would be helpful if future investigation of this topic could include longitudinal studies to determine whether these reported changes in gambling preference are also found when they are tracked prospectively. If the sample sizes of such studies are sufficiently large, specialised statistical procedures such as Markov Chain analysis could be employed to examine changes more formally. On the basis of the information considered, it appears that Lotto participation might be an 'absorbing state', drawing in many people who had other preferences and holding their involvement in Lotto long term. Preferences for other forms appear to be more transitional.

Given that one objective of the NZGS research programme is to assess changes in gambling and problem gambling since the 1991 national survey (Abbott & Volberg, 1991; 1996) was conducted, retrospective accounts of changes in preferences during the past five years are of particular interest. This information from the present study provides another perspective to the consideration of change that was addressed in Phase One of the NPS (Abbott & Volberg, 2000) and the longitudinal survey (Abbott, Williams & Volberg, 1999).

As mentioned above, preferences evidenced much greater stability over the past five years than they did from the time people first started gambling. Again, preferences for Lotto displayed very high stability over time, although a minority switched their preference to other forms, most notably 'other' activities and betting on horse or dog races. However, somewhat more people with preferences for these forms changed their preference to Lotto, again consistent with the notion that Lotto involvement might be an 'absorbing state'.

Other than a small number of people who had no favourite or who preferred Lotto five years ago, no others were 'recruited' to other lotteries or raffles. Most people with a preference for non-casino gaming machines retained this preference over the five-year period. Preference for betting on horse or dog races appeared to show less stability, with most of those who changed their preference changing it to Lotto. A similar pattern of stability was evident for people who had preferences for forms in the residual 'other' category. As with those who favoured track betting five years ago, most who changed preferences adopted a preference for Lotto. The least stable group was made up of people who reported having no preferred gambling activity five years ago. Most of these people subsequently developed a preference for a particular form. Lotto and other lotteries and raffles were mentioned most often in this regard.

As reported in Chapter Three, at the time that they first started gambling, most lifetime problem gamblers reported that they preferred betting on horse or dog races (30%), followed by card games for money (24%), other lotteries and raffles (15%) and non-casino gaming machines (11%). Nine percent said they had no favourite form at this time.

Five years ago, a similar percentage of lifetime problem gamblers (32%) indicated that they favoured betting on horse or dog races. In contrast to the situation when they first started gambling, Lotto ranked next in this regard (31%), followed by non-casino gaming machines (11%). Again, nine percent said that they had no favourite form. No other type of gambling activity was favoured by five percent or more problem gamblers.

During the six months prior to the present survey, Lotto was mentioned most often (25%) by lifetime problem gamblers, followed by betting on horse or dog races (22%), non-

casino gaming machines (16%), casino gaming machines (7%), card games (7%), other casino games (6%) and housie (5%). Six percent said they had no preferred form.

From these findings, while it is evident that both track betting and non-casino gaming machines exhibit considerable continuity, over time a wider variety of gambling activities have become preferred by problem gamblers. In part, this is likely to be a consequence of the introduction of new forms of gambling since the late 1980s. In the case of problem gamblers who started gambling at an early age, it may also in part reflect more ready access during their late teens and early adult years to forms that have age restrictions. With the exception of Lotto and other lotteries/raffles, those referred to in the preceding paragraph are all continuous in nature and some also involve an element of skill. In Phase One of the NPS (Abbott & Volberg, 2000), the present gambling preferences of current problem gamblers were examined. Track betting ranked first (26%), followed by non-casino gaming machines (21%), Lotto (13%), casino gaming machines (12%), other casino games (8%), Instant Kiwi (6%) and housie (5%). Apart from the placement of Lotto, the rank order is fairly similar to that found in Phase Two for lifetime problem gamblers.

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It is of interest that Lotto appears so high in the rankings of preferred forms for problem gamblers and that its ranking is higher currently than five years ago. A preference for or regular participation in Lotto has not been found to be a risk factor for problem gambling (Abbott & Volberg, 1999a; 2000). This is because while a substantial minority of problem gamblers frequently participate in and have a preference for Lotto, proportionately more non-problem gamblers do likewise. With respect to past and current gambling participation, problem gamblers are differentiated from non-problem gamblers by the relatively much higher level of involvement in continuous forms of gambling, especially gaming machines and track betting. However, many problem gamblers have a concurrent involvement in Lotto and, as indicated, a substantial number report that they prefer Lotto to other forms. Although this is the case, problem gamblers themselves very rarely attribute their gambling problems to Lotto involvement.

It has been noted that lifetime problem gamblers more often report that Lotto is their preferred form than do current problem gamblers. This was also found in the longitudinal study (Abbott, Williams & Volberg, 1999). In that study it was also found that whereas approximately a third of lifetime probable pathological and problem gamblers said they preferred Lotto when they were assessed in 1991, over a half nominated Lotto as their favourite form when they were re-assessed in 1998. Many of these were lifetime problem gamblers who did not currently experience problems and who no longer participated regularly in continuous gambling activities. Most, however, regularly or infrequently purchased Lotto tickets.

Earlier it was suggested that regular Lotto participation is an 'absorbing state', drawing in and holding people who previously had other preferences. There appear to be some indications that it may also play this role in relation to problem gambling. However, research is required to examine this hypothesis and determine how stable the non-problem state is for problem gamblers who continue to take part in Lotto and/or other non-continuous forms of gambling relative to those who abstain or who continue to take part in continuous forms. Until this research is conducted, it would be premature to advocate Lotto or other forms of non-continuous gambling involvement for people who have overcome or who are attempting to overcome gambling problems.

Self-assessed Changes in Gambling Participation and Respondent Reasons for Increases and Decreases

This section concerns respondents' own assessments of whether or not their overall levels of gambling involvement had changed and their reasons for those changes.

Self Assessed Changes

Based on respondent self-reports 28 percent of adults who had ever gambled were estimated to have decreased their overall gambling participation during the past five years, 19 to have increased their participation and 53 percent to have maintained their previous level of participation. Less stability was evident for lifetime problem gamblers. Forty-five percent reported decreases, 36 percent increases and 19 percent little or no change. The non-problem groups were more stable, with just over a half indicating that their gambling involvement had stayed much the same. However, the net direction of change differed for regular and infrequent gamblers. A third of infrequent gamblers indicated that their involvement had decreased and an eighth indicated that it had increased. A fifth of regular gamblers had decreased participation and a quarter had increased participation.

This matter was also examined in the 1999 longitudinal survey (Abbott, Williams & Volberg, 1999). In that study, lifetime problem and probable pathological gamblers were considered separately. Both groups, as did the combined probable pathological-problem gambling group in the present study, reported more change than the non-problem gamblers did. In the longitudinal study somewhat more reported decreases, probably a consequence of the fact that all participants had aged seven years since they were recruited to the study and no new participants with more recently acquired problems had been added. The 1999 study did not include infrequent gamblers and, in contrast to the present study, regular gamblers were divided into continuous and non-continuous groups. The regular continuous gamblers reported net decreases and the regular non-continuous gamblers reported net increases. For the combined regular gambler group, the findings appear to be similar to those of the present study although formal comparisons cannot be made because the longitudinal samples were not weighted to reflect their representation within the total adult population.

Gender, age, age at which people started gambling, and ethnic differences were also considered. Although just over half of men and women considered that their participation had stayed much the same, it is of interest that almost three times as many men reported a decrease than an increase, whereas, in the case of women, decreases balanced increases. **This finding is consistent with other information suggesting that relative to men, women have increased their overall gambling involvement in recent years.**

As was found for men, younger adults (people aged less than 35 years) reported that decreases greatly outnumbered increases (by a factor of more than 2:1). For adults aged 35 years or over, only slightly more reported decreases than increases and the proportion that indicated that their gambling stayed much the same was considerably higher (59% compared to 35%). **These findings are consistent with the view that patterns of gambling participation are less stable for younger adults and that**

many of them reduce their involvement as they get older. Older people, on the other hand, have more stable patterns. Given that in Phase One of the NPS (Abbott & Volberg, 2000) younger adults were under-represented among regular continuous and non-continuous gamblers, this suggests that as the younger age cohort ages further, it will have lower levels of gambling participation than older adults do today. This is an unexpected finding that requires corroboration or refutation by further study, both by way of repeat cross sectional studies and longitudinal surveys.

People who said that they started gambling during childhood or adolescence much more often reported decreased than increased gambling involvement during the past five years. Those who started gambling during their adult years much more often reported increases than decreases. The reasons for these results are not clear and may be complex. Both age (maturation) and cohort effects are likely to be operating**. It is interesting that while commencing gambling at an early age is a risk factor for problem gambling, it is also apparently associated with reduced gambling involvement. Further investigation is required to clarify what is taking place and whether or not problem gamblers who commence gambling at a younger age have a better or worse prognosis than those who commence gambling later in life.**

Whereas Europeans were somewhat more likely to report decreased than increased gambling participation, Māori somewhat more often reported the reverse. However, in contrast to Europeans and people of other ethnicities, few Māori (17%) considered that their gambling had not changed during the past five years and while somewhat more said it had increased, many said it had decreased. Seventy-nine percent of people of other ethnicities were of the view that their gambling had stayed much the same. This is a very high level of stability over time. Of those who reported changes, most (a ratio of over 7:1) said that their gambling had decreased. Given the small non-European sample sizes, the topic of ethnic differences in self-assessed and actual changes in gambling participation warrants further study. The present findings suggest that there may be considerable differences between ethnic groups and that, as a consequence, conclusions drawn from general population studies are unlikely to apply to many of them.

In addition to gambling participation status and sociodemographic variables, past gambling preferences and frequency of participation were considered in relation to self-assessed change in gambling involvement.

People who preferred betting on horse or dog races five years ago displayed the greatest stability over time, with 65 percent reporting that their overall gambling participation had stayed much the same. People who preferred this form of gambling were also distinguished from people with most other preferences in that, along with people who favoured other lotteries and raffles, they were the only ones that more often reported increased than decreased gambling participation. These findings are consistent with findings discussed earlier in relation to the hypothesis that track betting may be less resistant to reduced involvement over time, in both problem and regular non-problem gamblers, because of its diverse motivational base and the degree to which it is embedded in social networks.

People who said they had no preference five years ago or preferred Lotto or other lotteries and raffles displayed moderate stability (54% to 59% reporting no change). Decreases somewhat outnumbered increases in the first two of these groups.

People who preferred other forms of gambling evidenced less stability and their reports of decreased participation greatly outnumbered reports of increased involvement. The preferences involved were Instant Kiwi, non-casino gaming machines and other (unspecified) gaming activities. In the case of gaming machines, the ratio of decreases to increases was more than seven to one. This finding is consistent with the hypothesis that, in contrast to track betting, this gambling activity is highly prone to reduced involvement over time, because of its more circumscribed motivational base and perhaps more diffuse or transient social context.

Frequency of gambling participation five years ago was found to have a non-linear relationship to reports of changed participation. Only 39 percent of people who reported gambling every day and seven percent of those who reported gambling several times a week were estimated to have gambling participation that was much the same five years later. Over 60 percent in both groups indicated that their gambling involvement decreased. However, in the case of those who had gambled several times a week, it should be noted that a quarter experienced increased involvement. These findings are of interest in that these groups are expected to include problem gamblers and people at risk for the development of gambling problems. **They suggest that very frequent gambling involvement is for most people a transitory state and that, while a minority progress to greater involvement and problem development, relatively more move in the opposite direction.** Why some people go one way and some people go the other way will be considered shortly.

People who gambled once a week or less five years ago displayed greater temporal stability. Over a half of the people in this category were estimated to have gambling involvement that stayed much the same and increases and decreases were more evenly balanced. However, those who gambled less than once a month five years ago twice as often indicated that their participation subsequently decreased than increased. **This suggests that both people with the highest and lowest levels of involvement in gambling have a tendency to decrease rather than increase their participation over time.**

Reasons for Changes

Survey participants who indicated that they believed that their gambling participation had changed during the past five years were asked what they thought had led to this change. Just over a half (53%) considered that it had not changed, 19 percent that it had increased and 28 percent that it had decreased. **More money being available and more gambling options were the reasons most frequently given for increased gambling. A wider range of reasons for decreased involvement were provided, including less money being available, loss of interest, not winning, other priorities, and a change of circumstances. Similar reasons were given for increased and decreased gambling in the longitudinal survey (Abbot, Williams and Volberg, 1999).**

In addition to asking participants who considered that their gambling had changed what they believed had led to these changes, all participants were asked if advertising, the introduction of new kinds of gambling, greater access to gambling or easier access to credit cards had ever led to an increase in their gambling.

In Chapter Three, it was estimated that just under a quarter of people considered that advertising or the introduction of new forms of gambling had led to an increase in their gambling involvement at some time. Under a fifth thought that greater access to gambling had had this effect and two percent indicated similarly for easier access to credit cards. Only a minority of specific forms of gambling were considered to be appreciably influenced by one or more of these factors. Lotto participation was most often considered to be influenced by advertising, the introduction of new types of gambling and the increased ease of gambling. Instant Kiwi was also considered to be influenced by these three factors, but by fewer people. Somewhat more people indicated that their involvement in TeleBingo had increased at some time as a consequence of the first two factors. A small number of people indicated that their involvement in casino gambling had increased as a result of the introduction of new forms and the increased ease of gambling. Non-casino gaming machine involvement was also considered to have been influenced somewhat by the increased ease of gambling. Gaming machine participation and other lotteries and raffles were mentioned most often in relation to credit cards becoming more readily available, but again by only relatively small numbers of people.

Given the large amount of money spent on gambling advertising, it is of interest that, apart from Lotto, relatively few people consider that advertising has ever led to an increase in their gambling. It is also of interest and surprising that so few people considered that the introduction of new forms of gambling and the increased ease of gambling had this effect at any time. In part the low numbers result from the fact that it was estimated that a third of people did not consider that their gambling had increased at any time. However, it is possible that the importance of these factors has been over-rated. It is also possible that people have an aversion to attributing increases in their gambling behaviour to external causes. This possibility could be examined by asking to what extent respondents consider that other people's gambling is influenced by these factors.

Problem gamblers more often than non-problem gamblers indicated that these four factors had resulted in an increase in their gambling involvement. With respect to credit cards, whereas no infrequent gamblers and only two percent of regular gamblers considered that easier access increased their gambling, 17 percent of problem gamblers did. From information presented earlier, it appears that problem gamblers' gaming machine participation is probably most affected in this way.

4.6 Assessing the 'Big Win' and 'Near Miss' Hypotheses of Problem Gambling Development

As indicated in Chapter Three these hypotheses were addressed by asking participants it they had ever won a major prize, or been close to winning a major prize. A 'major prize' was defined as being equivalent to a half or more of their annual income or, if a child at this time, pocket money. As discussed earlier, 'big wins' are considered to be important in developing regular patterns of gambling involvement and a risk factor for the development of problem gambling. It is also considered likely that perceived 'near misses' will have a similar effect.

Whereas ten percent of people were estimated to have had a 'big win' as defined in the previous paragraph, a quarter of problem gamblers reported that they had had this experience. Similarly, whereas 17 percent of people reported having had a 'near miss', 35 percent of problem gamblers reported likewise. These findings are consistent with the hypotheses under consideration.

It is of interest that regular and infrequent non-problem gamblers reported similar frequencies of 'big wins' given that regular participants would be expected to have had more opportunities to do so. Given the small sample, this could be a chance occurrence. However, from the findings presented previously, many infrequent gamblers have been regular gamblers in the past. As these people are likely to be older, their lifetime exposure to opportunities may not in fact be less than those of current regular gamblers. Given that the two non-problem groups did not differ with respect to their frequency of 'big wins', it is also of interest that regular gamblers more than twice as often as infrequent gamblers reported having 'near misses'. Perhaps this reflects an increased likelihood on the part of regular gamblers to interpret losses as 'near misses' and that this cognitive distortion, in turn, helps to sustain their pattern of regular gambling participation.

Although it is theorised that 'big wins' and 'near misses' sustain gambling involvement by increasing its reward value and helping to bring it under the influence of intermittent reinforcement schedules, in the present study only a minority of people who had these experiences acknowledged that they had affected their subsequent gambling behaviour. However, in all cases those who considered that 'big wins' had affected their behaviour indicated that it had resulted in them gambling more so they could win more. The majority of people who reported that 'near misses' had affected their gambling said that it had increased it or given them a thrill or excitement. However, a minority said it had put them off gambling.

Further research is required to examine the role of these experiences more fully in relation to gambling behaviour and problem gambling. It would be of interest to know why most people do not themselves consider that they affect their subsequent gambling involvement. Is this because they do not have an effect, or, do they influence the people involved in ways that they are not consciously aware of. Given that people reported that 'near misses' influenced them more often than 'big wins', perhaps the perception of nearly winning is actually more important in sustaining regular gambling and problem gambling patterns than actual 'big wins'?

4.7 Gambling and Problem Gambling in Relation to 'Costs' and 'Benefits' of Gambling in Major Spheres of Life

One of the reasons for developing a series of questions concerning gambling-related experiences and consequences in various life domains is to provide a more comprehensive account of the impact of problematic gambling. It also provides the potential to examine these phenomena in relation to different aspects of gambling involvement such as gambling mode, frequency of gambling, loss of control over gambling and the size of gambling losses. Research along these lines might be more productive than focusing predominantly on the clinical entity of problem or pathological gambling. However, to facilitate this alternative approach, it would be helpful if the series of questions used in the present study were more formally developed as relatively

homogeneous psychometric scales. This work is beyond the scope of the present study although it is intended to draw on the data subsequently to further this objective.

The questions referred to in this section incorporate a number that relate to positive aspects of gambling. In part this recognises that gambling has some beneficial outcomes for many, perhaps most, participants. The inclusion of positive items may also increase the likelihood that people will respond to negative items more candidly.

From the first group of questions, it is evident that the majority of people who gamble, including problem gamblers, consider that gambling has given them pleasure and fun and report that they have daydreamed about getting a big win. Over a half of regular non-problem gamblers and three-quarters of problem gamblers report that gambling has at least sometimes been a hobby and interest. These responses illustrate some of the positive aspects of gambling and help to explain why many people take part in gambling activities when, in the long run, almost all regular gamblers lose money.

In contrast to non-problem gamblers a significant minority of problem gamblers report that when they are depressed, they have gambled to escape. Earlier, it was mentioned that this is one of the reasons why gambling is particularly rewarding for some people. However, while gambling can act as a distraction from negative emotional states, this attraction may also contribute to gambling, in the longer term, becoming a problem. Relative to non-problem gamblers, problem gamblers also much more often indicated that after losing heavily at gambling they had felt depressed. They also more often said they felt guilty when they finished gambling and that their gambling was a problem.

From the findings described in the last paragraph, it appears probable that a number of problem gamblers get caught in a circular process where they gamble to reduce depressed or other negative emotional states that, perhaps to an increasing extent over time, result from their gambling behaviour and its consequences.

With respect to interpersonal and family aspects of gambling, a substantial minority of people reported that they talked about and took part in gambling with their family and friends. This social dimension of gambling was discussed briefly earlier. Problem gamblers much more often mentioned this type of involvement than non-problem gamblers did. However, problem gamblers also much more often indicated that their gambling was at least sometimes more important to them than socialising with family and friends and that their gambling led to a variety of conflicts and problems within families and between friends. Although some non-problem gamblers reported negative consequences, they were rare in comparison to the frequency with which they were mentioned by problem gamblers. For example, problem gamblers much more often acknowledged that their family or friends had criticised their gambling and that their gambling had caused arguments about money, caused problems for their family or friends and led to the breakup of important relationships.

Compared to the role and impacts of gambling in relation to family and friends, gambling appears to be less important in work settings. Apart from 16 percent of people reporting that during the past six months gambling was widely discussed in their workplace and seven percent indicating that they sometimes or more often went gambling with

workmates, very small numbers mentioned other work-related gambling experiences or consequences. However, a minority of problem gamblers indicated that thinking about gambling had helped them get through a boring job and a few indicated that gambling had helped them to get on at work. Some also acknowledged negative consequences such as reduced work efficiency or lost time, and a few reported job changes or termination due to gambling problems.

As discussed earlier, the reason most often given by people for gambling is that they do so to win money. However, again as mentioned earlier, the nature of commercial gambling activities are such that the great majority of people who take part, in the long run, lose. In addition, a minority loses more than they can afford and, for some of these people, this subsequently generates a variety of other problems. While the type and extent of these problems vary, most authorities consider that they have sufficient consistency to justify classifying people who experience a number of them as problem gamblers and diagnosing those with particularly severe problems as pathological gamblers (Abbott & Volberg, 1999a).

In the present study, it was estimated that nearly three-quarters of adults who had ever gambled considered that gambling had never helped them financially and over two-thirds were estimated to believe that they had never won more than they had lost gambling. Only one percent were estimated to have often or always been helped financially and three percent to have often or always won. While it is not known, objectively, what percentage of people obtain a net financial gain from gambling, these findings suggest that the great majority of people may well have a realistic perception of the overall financial implications of their gambling behaviour.

Although problem gamblers did not indicate more frequently than non-problem gamblers that they often or always won more than they lost, they much more often indicated that gambling, at least sometimes, had helped them financially. This is probably an accurate assessment of their situation given their high level of participation. In this regard, it is of interest that 43 percent of problem gamblers were estimated to have at least once won more than $1,000. This compares with 17 percent of regular gamblers and six percent of infrequent gamblers. This finding is also consistent with the 'big win' hypothesis considered earlier, as well as with the expectation that reports of winning large sums will be related to the frequency with which people, both problem and non-problem gamblers, take part in gambling activities.

In the case of the other financial aspects of gambling considered, there were marked differences between problem and non-problem gamblers. Problem gamblers much more frequently reported that they had spent more than they could afford gambling, gambled to try to win money to pay off gambling debts, borrowed money to gamble or to pay gambling debts and that friends or family had had to pay their debts. These findings are consistent with those of the 1991 Phase Two survey (Abbott & Volberg, 1991; 1996) and other studies (Abbott & Volberg, 1999a).

While the problem gamblers much more often mentioned these various financial problems than non-problem gamblers did, their rates were considerably lower than is typical of problem gamblers in treatment settings (Abbott & Volberg, 1999a). This is likely to be mainly a consequence of the present sample including substantially more people with less severe problems than is the case in treatment populations. It is also

probable that problem gamblers interviewed in community settings by survey interviewers are less prone to report problems than are people who acknowledge that they have problems and have made a decision to try to overcome them. In the present study, it was estimated that 57 percent of the lifetime problem gamblers at least rarely considered that they had a gambling problem at some time in their lives.

The most recent diagnostic criteria for pathological gambling include the commission of criminal acts to get money to gamble or pay gambling debts (American Psychiatric Association, 1994). Criminal activities of this type were included because they are very common among people who seek treatment for serious gambling problems and who join mutual help groups such as Gamblers Anonymous (Abbott & McKenna, 2000; Abbott, McKenna & Giles, 2000).

Of the legal aspects of gambling considered in the present study, with one exception, less than one percent of people acknowledged that any of the items had ever applied to them. The exception concerned having borrowed money without permission to gamble. It was estimated that two percent had done this rarely. However, it was estimated that 14 percent of problem gamblers acknowledged having undertaken this activity at least rarely. Eight percent of problem gamblers also acknowledged having thought about doing something illegal to get money to gamble or to pay gambling debts and one percent indicated that their gambling had led to problems with the police.

Abbott, McKenna and Giles (2000) found that the more serious problem gamblers problems are, the more likely they are to report having committed criminal acts to obtain money to gamble and to have had contact with the criminal justice system for this reason. Thus, as with financial aspects of problem gambling, it can be expected that the composition of the sample, relative to that of clinical, mutual help or prison samples, in large part accounts for the very low rates of criminal activity reported in the present study. However, it is also expected that such activities are under-reported because of reluctance on the part of respondents to disclose them to interviewers.

The final grouping of 'costs' and 'benefits' items related to aspects of gambling participation included many attributes or factors known to characterise or be associated with problem gambling.

Seventeen percent of adults who had ever gambled were estimated to believe that they had ever or always expected to win every time they started to gamble and a further 15 percent to believe that this was sometimes the case. Given that only a very small percentage of people considered that gambling often or always helped them financially or resulted in them winning, this appears to be contradictory or illogical. It is probably both, and is related to the belief that many regular and problem gamblers have that they can sometimes beat the odds, either through their own skill or by fate intervening, for example, by way of them having a lucky break or run (Walker, 1992).

Twelve percent of people reported that their gambling had ever been often or always skilful. Earlier it was mentioned that there is an element of skill involved in some forms of gambling. Some gamblers are also more adept at exercising skill in these forms of gambling. However, perhaps apart from a small number of professional and regular gamblers, the large majority of gamblers, including those who believe that their gambling is skilful, lose in the long run (Walker, 1992). **In the present study, as in previous research (Abbott & Volberg, 1992; 1996; 1999a; Walker, 1992), it was found that**

problem gamblers much more often than non-problem gamblers considered that their gambling was at least sometimes skilful and that they expected to win every time they started to gamble. These beliefs or cognitive distortions appear to play a role both in the development of problem gambling as well as in sustaining problem gambling in the face of escalating debts and related adverse consequences.

The present study also provides information concerning 'chasing', which is another of the diagnostic criteria for pathological gambling that is also considered to play an important role in its genesis. Twelve percent of problem gamblers acknowledged that after losing at gambling, they had ever often or always gone back another day to win back their money. It was estimated that a further 26 percent sometimes did this. The respective percentages for people generally were two and six percent. It was also estimated that over 30 percent of problem gamblers were of the view that when they were losing and had urgent debts, they went on gambling longer. Only one non-problem gambler reported having this experience and this was rarely. Whereas the logical strategies, if the objective is to win money or minimise losses, are to 'stop while one is ahead' or 'cut your losses', chasing typically leads to a further escalation of losses.

In addition to the role of cognitive distortions and chasing in problem development, it was mentioned earlier that emotional factors are implicated. In the present study, compared to non-problem gamblers, problem gamblers much more often indicated that they gambled when they had had a disappointing or frustrating day. By providing a distraction or in other ways reducing negative emotions, the reward value of gambling can be increased. Technically, this is referred to as negative reinforcement.

Positive reinforcement is also important for gamblers and problem gamblers. Apart from money, which is a potent reinforcer for most people, gambling participation generates positive emotions. In the present study, a fifth of adults who had ever gambled <u>always</u> or often felt excited when they were gambling and over a quarter felt relaxed. A further third were estimated to have <u>sometimes</u> felt excited and a further quarter to have <u>sometimes</u> felt relaxed. This aspect of gambling can be expected to be one of the reasons why many people take part, even when they are aware that they are likely to lose. The Productivity Commission (1999), in assessing the net financial contribution of gambling to Australia, gave a high weighting to the satisfaction that it provides for consumers. This was considered to be more important than the benefit to the economy by way of direct and indirect employment generated by the gambling industries.

In the present survey, problem gamblers much more often reported both excitement and relaxation than non-problem gamblers did. Again, this indicates the high reward value that gambling has for problem gamblers and may also partly explain why they engage heavily in gambling prior to the development of their problems. Longitudinal studies of non-problem gamblers are required to clarify the role of positive and negative reinforcement in the origin of problematic gambling. As mentioned, by definition, problem gambling is characterised by many aversive gambling-related consequences for problem gamblers and people close to them.

Aversive outcomes eventually lead to many problem gamblers seeking to stop or reduce their gambling involvement. However, this effect is countered by the fact that immediate rewards generally exert a more powerful influence on behaviour than positive or negative

consequences that are more distant in time and place. **In addition, as mentioned, long-term exposure to intermittent reinforcement combined with the development of a variety of cognitive distortions also appear to play a part in sustaining problematic behaviour in the face of escalating negative consequences.** In Chapter Three, it was reported that over a third of problem gamblers indicated that when they had lost more money than they intended, they at least sometimes were more likely to go on gambling if they were excited. Only three percent of people overall (including problem gamblers) reported likewise.

Loss of control over gambling is another important aspect of problem gambling and its development. In the present study, six percent of adults who had ever gambled were estimated to have at least sometimes gambled longer than they planned and three percent were estimated similarly to have felt that they wanted to stop but did not think they could. The corresponding estimates for problem gamblers were 69 percent and 41 percent respectively.

In the presentation of gambling 'costs' and 'benefits', and in their discussion, problem and non-problem gamblers have been compared. This is common practice in the literature and comparisons are sometimes augmented by tests of statistical significance. While such comparisons help to provide a fuller understanding of differences between problem and non-problem gamblers, this approach has some shortcomings. The major issue is that the criteria being used to define these two groups in part overlap with the so-called 'costs' and 'benefits'. In other words, they are not truly independent and some of the associations are thus a consequence of this. A corollary is that some of the resulting discussion is tautological (circular), indicating little more than that "problem gamblers differ from non-problem gamblers because they are problem gamblers". Further research is required to refine the measurement of the most important underlying constructs and ensure that there is less overlap between dependent and independent variables.

Both positive and negative aspects and consequences of gambling have been considered in this section. This type of information is potentially important in assessing the wider benefits and costs of gambling to New Zealanders and the national economy. However, it has been argued that a number of the negative aspects are likely to have been under-reported by participants, perhaps particularly those of a financial or legal nature. Positive aspects, on the other hand, are less sensitive and are probably more accurately reported. Consequently, it will be important in future macro-level economic and social cost-benefit studies to incorporate information from clinical, penal and mutual help group research. This said, it is equally important to appreciate that problem gamblers in these settings are not representative of all problem gamblers living in the community. Most people with less severe problems are excluded, as well as people who have serious problems but don't acknowledge them and those who acknowledge their problems but do not seek specialist help to overcome them. The majority of problem gamblers are in these excluded or under-represented categories (Abbott & Volberg, 1999a; 2000). **Reliance on community studies alone will result in a downplaying of the economic and social costs that arise from problem gambling. Reliance on special population studies alone will exaggerate the economic and social costs that problem gambling generates. Accurate estimation necessitates a synthesis of both types of information.**

4.8 Relationships between Problem Gambling, Health and Wellbeing

The major interest in this part of the study was in extending previous research, including that undertaken in the 1991 national survey (Abbott & Volberg, 1992; 1996) and the longitudinal survey (Abbott, Williams & Volberg, 1999) that examined links between problem gambling, hazardous alcohol use and mental disorder. However self-rated happiness and some more general health-related measures were also considered, both in relation to gambling participation and preferences and to problem gambling.

In Chapter Three, information obtained by the administration of a variety of health-related measures was presented. Most assessed aspects of mental health and substance use and misuse. Some of these measures involved single questions. Others were derived from formally developed psychometric tests that have been validated and widely used in New Zealand and internationally. The latter measures provide information that is more likely to be valid and reliable. Accordingly, they should be given greater weight, both when findings based on them are considered in their own right, and when they are compared with those derived from the non-standardised measures.

It is also important to note that most of the measures used in this study have not been adequately validated for use with minority ethnic groups. Consequently, caution is required in interpreting the findings obtained from people of non-European ethnicities and when making comparisons between ethnic groups. This caution includes the problem gambling measures.

It is also important at this juncture to remind the reader that many of the variables considered separately in relation to gambling status (problem gambling, non-problem regular gambling and non-problem infrequent gambling) are related, to varying degrees, to each other. As a consequence, some associations may in fact be artifacts, arising through shared associations between the variables being considered with other variables. Finally, associations do not necessarily mean that variables are causally linked.

These considerations apply equally to much of the information presented and discussed throughout this report. For these and other reasons mentioned earlier, such as small sample size and various design features, it follows that all of the findings, discussion and conclusions should be considered to be tentative and exploratory. This is especially the case when specific hypotheses are not being examined or when theory or previous research has not guided relationships that are under investigation. It remains for future investigators to explore most of the terrain covered in this study with a sharper focus, using more rigorous methodologies.

Some benefits of gambling have been considered. In the related field of alcohol studies, while heavy alcohol consumption is associated with the development of alcohol misuse, alcohol dependence and a wide variety of health problems, in recent years a number of health benefits stemming from moderate consumption have been demonstrated. The possibility of similar gambling-related benefits received some attention in the present study.

As already discussed, a substantial number of people reported that their gambling participation was associated with positive emotional states and played a part in their social interactions with friends, family members and, to a lesser extent, workmates. Some forms of gambling also appear to be more intrinsically engaging or satisfying for many participants. For these reasons, it might be expected that regular participation could play some role in influencing people's overall sense of wellbeing or happiness. This topic does not appear to have been studied previously, apart from one study of self esteem in relation to gambling and problem gambling (Volberg, Reitzes & Boles, 1997).

In Chapter Three, information on self-rated happiness was presented for problem gamblers, regular gamblers and infrequent gamblers. Whereas three-quarters of regular non-problem gamblers were estimated to have been very happy with their life generally during the past six months, less than two-thirds of infrequent and problem gamblers were. More than twice as many infrequent gamblers than regular or problem gamblers were estimated to have been very or somewhat unhappy. **Given that people in these three groups differed in other ways and that some of these differences are likely to influence life satisfaction, it would be premature to conclude that regular gambling participation contributes to overall happiness or a sense of wellbeing. However, these findings indicate that further investigation of this topic is warranted, using more robust measures of life satisfaction and positive mental health, and designs that allow the effects of likely confounding variables to be controlled.**

Quite substantial differences in self-rated happiness were found between people who preferred certain types of gambling. The highest ratings were obtained for people who preferred playing card games for money, Lotto and non-casino gaming machines. Lower ratings were obtained for people who preferred Instant Kiwi and track betting. In many cases, sample sizes were small and the results may be unreliable. Again, while factors other than gambling preference or participation are likely to be important in explaining these differences, further study of satisfaction associated with different forms of gambling and its possible wider influence on wellbeing appears to be warranted.

As in Phase Two of the 1991 national survey, the GHQ-12 was used to assess clinically significant levels of non-psychotic psychological disturbance. On this measure, although somewhat more infrequent and problem gamblers than regular gamblers were identified as experiencing significant psychological distress, the difference was minor and probably not significant. In Phase Two of the 1991 national survey, interviewer-assessed probable pathological gamblers had over double the rate of GHQ-defined mental disorder than other people included in the sample. The SOGS-R probable pathological and problem gambling groups also had somewhat higher rates than the two groups of non-problem regular gamblers.

The apparent difference between the results of these two studies may be due to differences in the samples and statistical treatment of their data. In the present study, regular continuous and regular non-continuous non-problem gamblers were grouped together and weighted to reflect their respective expected proportions in the population. In the 1991 study, they were treated as separate groups and were not weighted. In that study, the regular continuous gamblers had less than half the rate of psychological disturbance that the regular non-continuous gamblers had. Apart from indicating that these two groups should probably be considered separately when examining gambling participation in relation to mental health, this finding suggests that their combination and

weighting in the present study might account for the reduced difference between regular and problem gamblers. In the present study, there are substantially more non-continuous than continuous gamblers in the combined regular gambling group. In addition to this, the SOGS-R problem gamblers in the present study had somewhat lower rates of psychological disturbance than those in the 1991 study. The reason for this is unknown.

Just under a third of people whose favourite form of gambling was playing cards for money were GHQ-12 cases, almost double the estimate of 18 percent for the population. This is interesting given that this group had the highest happiness ratings. However, it should be noted that happiness and mental health (defined by positive indices) and mental disorder are not simply opposite ends of the same continuum. Rather, they appear to be largely separate dimensions (Abbott, 1994). While it is theoretically possible that people who prefer card games are characterised by higher levels of both wellbeing and psychological disorder, the estimates are based on a very small sample and may well be unreliable. Thirty percent of people who said they preferred track betting were also classified as currently experiencing non-psychotic mental disorder. This group also included the second lowest number of people who said they were currently very happy. People who said they preferred other (not separately specified) types of gambling had the lowest rate of psychological disturbance. As with the happiness findings, this topic requires more focused investigation before the findings reported in this study can be meaningfully interpreted.

In contrast to the situation with GHQ-12 defined mental disorder, problem gamblers reported that they consumed more alcohol per drinking occasion and were estimated to have a hazardous drinking rate that was more than double that of non-problem gamblers. Thirty-seven percent of the problem gamblers were estimated to have co-morbid alcohol problems. The survey estimate for the adult population was 17 percent, identical to the estimate for adults obtained from the 1996/1997 New Zealand Health Survey (Ministry of Health, 1999) using the same measure. Hazardous alcohol use rates were highest for people who said Instant Kiwi or betting on horse or dog races were their favourite gambling activities and lowest for people who favoured other lotteries and raffles or card games.

The association of gambling and alcohol problems is a consistent finding in New Zealand (Abbott & Volberg, 1992; 1996; 2000) and in some other countries where it has been investigated (Abbott & Volberg, 1999a; Productivity Commission, 1999). Further research is required to examine relationships between the development of both non-problematic and problem gambling and alcohol use and misuse. The findings that co-morbid hazardous drinking patterns are associated with worse long-term prognoses for problem gamblers and that, when problem gamblers overcome gambling problems, alcohol problems often persist or develop (Abbott, Williams & Volberg, 1999), also highlight the importance of this topic for clinical research and practice.

As noted in Chapter Three, compared to non-problem gamblers, problem gamblers also had substantially higher rates of tobacco, cannabis and other forms of illicit drug use. While only 12 percent of problem gamblers acknowledged using illicit substances other than cannabis during the past year, this rate was 12 times that for adults generally. The adult population estimate for current tobacco use once a day or more often was 21 percent, similar to estimates ranging from 23 to 25 percent obtained from national surveys conducted during the mid 1990s (Ministry of Health, 1999). These

other estimates included 15 to 17-year-olds. As with alcohol, while relatively little is known about the reasons why problem gamblers have high rates of drug use, similar associations have been reported previously (Abbott & Volberg, 1999a; Walker, 1992; Wildman, 1998).

The similarities in the estimates for tobacco use and hazardous alcohol consumption between the present survey and the high quality New Zealand Health Survey increases confidence in the problem gambling and other adult population estimates obtained from the present survey. However, there remains much less certainty about the reliability of estimates derived from the smaller sub-samples.

Given the elevated rates of psychological disturbance, substance use and, in the case of alcohol, hazardous use, it is surprising that problem gamblers more often than non-problem gamblers considered that their overall health was good. Similarly it is surprising that they did not more often report visiting a doctor during the 12 weeks prior to the survey than non-problem gamblers did. In part, this could be a consequence of over-representation of Māori and younger adults among lifetime problem gamblers, groups that less often reported doctor consultations. **Nevertheless, over a half of problem gamblers did visit a doctor during this period. This suggests that medical practitioners could play a significant role in detecting problems and perhaps intervening therapeutically.**

4.9 The Identification of Major Risk Factors of Problem Gambling

To this point, a number of factors associated with problem gambling have been identified and discussed. While some of these occur in association with problem gambling or after its development and may be more properly considered to be part of the problem gambling construct, others occur prior to its onset and are likely to be risk factors. In some cases the temporal sequence is obvious, however, verification that factors precede the onset of problem gambling or its escalation requires prospective study which is so far lacking in the gambling studies field. Given the multitude of variables associated with problem gambling and the complexity of their inter-relationships with one another, clarification of the unique contribution of particular variables and their importance relative to others presents a major challenge. While the presence of risk factors increases the probability that problem gambling will occur, the way in which they exert this effect can only be determined by careful, focused investigation. Studies of this type are in their infancy.

In the field of epidemiology, the parents and relatives of people who experience disorders or illnesses are often examined to see whether or not they have experienced the same or related disorders. In addition to assisting with the identification of a particular class of risk factors, in some instances this research has progressed to enable causes to be determined and more effective treatments and preventative interventions to be developed.

In the present study, the fathers of lifetime problem gamblers were more than four times more likely than the fathers of non-problem gamblers to be assessed by respondents as probably having experienced a gambling problem themselves. Mothers appeared to have a somewhat elevated rate, but much less than that of fathers. However, in the case of siblings, the gender difference was reversed. Sisters were ten times more likely

to be considered to have problems and, in the case of brothers, there was no difference between problem and non-problem gamblers. Problem gamblers also reported that their cousins approximately twice as often had problems**. While the sample sizes in this study are small in most instances, the general finding of higher reported rates among the family members and relatives of problem gamblers is a consistent one in the literature (Abbott & Volberg, 1992; 1996; 1999a; 2000; Abbott, McKenna & Giles, 2000)**.

Problem gamblers also more often mentioned that they knew other people who they thought had gambling problems, including spouses, friends and other people important in their lives, and workmates.

Research is now required to obtain more detailed information about these relationships and how they contribute to problem gambling development and impact on other aspects of the lives of people involved.

At this stage, it is not known how people determine that someone they know has, or is likely to have had, a gambling problem, or how this determination compares with identification based on clinical interviews or screening tests. There is the possibility, given problem gamblers' greater familiarity with the nature of problem gambling, that they may be better than non-problem gamblers at identifying problems in others. If so, the differences outlined above might not be accurate. Clarification of this matter and obtaining more useful information on this topic will require interviewing entire extended family networks.

It is of interest that the problem gambling rates given for parents appear to be higher than those derived from respondents' assessments of their own behaviour. Presumably they apply the same or similar criteria in both cases, although this requires verification. If so, what does the difference mean? This finding could arise if problem gambling was more common in the past. It may, at least in part, arise from parents having lived longer and thus having more time to develop problems. It is also possible that people are more likely to identify and report problems in other people than in themselves. If this is the case, their self-assessments will under-state the prevalence of problem gambling. These are just some of the questions and issues that arise in this area and that warrant further study.

In the present investigation, 83 percent of the lifetime problem gamblers reported that they believed that someone in their lives had or had had a gambling problem. For the non-problem gamblers, the figure was 46 percent. In 1991, 76 percent of the interviewer-assessed probable pathological gamblers and 59 percent of the non-problem gamblers (who were all regular gamblers or SOGS-R defined probable pathological or problem gamblers who were not identified as having serious problems by the interviewers) reported that they believed they knew someone with a gambling problem (Abbott & Volberg, 1992). Although the samples differ and the 1991 sample was not weighted, meaning that clear comparison is precluded, it does not appear that major changes have occurred in the extent to which people report problems among others known to them. This, perhaps, is surprising given that it could be expected that public awareness of problem gambling has increased during the past decade.

In addition to asking respondents about gambling problems among family members and other people in their lives, they were asked whether or not they considered that these

people had alcohol problems. This question was included because of the strong associations between gambling and alcohol problems mentioned in the previous section and the possibility that the presence of alcohol problems in a parent or other family member might be a risk factor for the development of gambling problems.

Contrary to expectation, the reverse was found. People assessed as having gambling problems were much less likely to report that a parent had an alcohol problem than were non-problem gamblers. There was little or no difference between reports of alcohol problems among other family members or other persons known to respondents. These findings require verification using larger samples and stronger methodologies. However, they are not consistent with the hypothesis that parental and familial alcohol problems contribute to problem gambling development. Further consideration of other possible implications of these findings should probably await the outcome of future research that might also examine whether parental and familial problem gambling is a risk factor for the development of alcohol problems. The data set upon which the present study is based contains some information that is relevant to this question. Further analysis will be undertaken in due course.

Given the much higher prevalence of alcohol problems than gambling problems in New Zealand and noting that problem gambling may be less obvious than alcohol misuse or dependence and has much more recently come to professional and public attention, it is surprising that far fewer people (less than a quarter) reported that they believed they knew someone with an alcohol problem. Perhaps media attention and other publicity about problem gambling in New Zealand during the past decade has generated a high level of awareness of gambling as a significant health and social problem.

The design and sample size of the study precluded extensive use of multivariate modeling to clarify which of the various factors associated with problem gambling are the fundamentally most important when the effects of related variables are controlled statistically. However, as indicated in the preceding chapter, some analyses of this type were conducted and the results reported.

Of the sociodemographic variables, three emerged as the strongest independent predictors of lifetime problem gambling, namely male gender, non-European ethnicity and younger age. These variables were also identified as significant risk factors in Phase One of the NPS (Abbott & Volberg, 2000), from which the Phase Two sample was selected. As discussed earlier, this was only the case for lifetime problems, although non-European ethnicity (as indexed by Māori and Pacific Island ethnicity) was important for both current and lifetime problems.

These three sociodemographic measures were incorporated in a logistic regression analysis as control variables alongside a range of other predictor variables that had some association with problem gambling. From this analysis, it was found that people who preferred a continuous form of gambling were eight times more likely to be lifetime problem gamblers than people who preferred non-continuous forms. As discussed earlier and examined in more detail in Phase One (Abbott & Volberg, 2000, p.18), non-casino gaming machines and track betting are particularly important in this regard. Other variables associated with twice the likelihood of being problem gamblers when the

effects of sociodemographic variables were controlled were both having had a 'big win' and nearly having had a 'big win' in the past.

From the results of the analysis described in the preceding paragraph, it is concluded that these are likely to be particularly important factors in the genesis of problem gambling and that they warrant further study to verify this and clarify how they exert their influence. They are consistent with the conclusion reached by the Productivity Commission that the most important factor in the development of problem gambling is regular participation in certain forms of continuous gambling. In both New Zealand and Australia, gaming machines appear to most important in this regard, followed by track betting.

4.10 Examining the Extent to which Adult New Zealanders have Sought Help for Problem Gambling for Themselves and for Other People and Determining the Nature of this Help and its Outcomes

Forty-one percent of the lifetime problem gamblers and 55 percent of the current problem gamblers indicated that they considered that they had or had had a gambling problem. This rate of problem self awareness is similar to that found in the 1991 national survey (Abbott & Volberg, 1991; 1992; 1996). **It was estimated that 61 percent of these people had experienced periods of six months or more when they were free of mostly free of gambling problems. Just over a third had stopped gambling at these times. Although just over a half sought help from a specialist agency or professional at such times, the great majority believed that their own efforts had been most effective. Of the specialist agencies and professionals, only alcohol and drug treatment centres were considered to have been effective in helping them to overcome their problems.**

Eleven people said that they had sought help for 25 other people with gambling problems. Families and mutual help groups were mentioned most often. Mental health professionals, the gambling helpline and friends were also mentioned having been contacted, between twice and three times each. A few other sources of help were each mentioned once. Most of these contacts were deemed to have been helpful or very helpful.

In Phase Two of the 1991 national survey (Abbott & Volberg, 1992), only two people (8% of those who considered that they had ever had a gambling problem) reported that they had sought help for themselves. Neither of these people said they had sought professional or specialist help. **Comparison of the findings from the two surveys suggest that there was a much higher degree of help-seeking on the part of problem gamblers in 1999 than eight years earlier.** The degree of help-seeking for other people was more similar in the two surveys, although in 1991, the great majority of help had been sought from families, friends and informal sources, followed by mutual help groups. General practitioners were mentioned twice and a counsellor once. At that time there were no specialist problem gambling agencies.

Much remains to be learnt about self recovery and the role of mutual help groups and specialist and professional interventions in the life histories of problem gamblers. Now

that a range of services are available in New Zealand and are being accessed by large numbers of people with serious gambling problems, research of this type is possible.

Given that families are often the first places problem gamblers turn to for help and tend to be rated as helpful, further education of the general population about gambling and problem gambling appears warranted.

4.11 Conclusion

While the present study has provided information that greatly augments that generated by Phase One of the 1999 NPS, as cautioned at various points, the nature and size of the sample demand that the survey findings should be regarded as tentative and exploratory. This is especially so with respect to the small subgroup findings, for example those pertaining to Māori and people of other ethnicities. Some of the findings are consistent with theory and those of previous studies. Others, however, relate to issues that have not previously been considered and others are contrary to expectations based on theory and/or prior investigation. The advancement of the field of gambling studies and the goal of enhancing our understanding of problem gambling in New Zealand will require further large-scale general population studies and more focused investigation, employing both qualitative and more rigorous quantitative methodologies, than those used in this report.

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APPENDICES

Appendix One: Methodological Aspects of and Major Findings from pre-1999 New Zealand National Surveys

1991 National Survey of Gambling and Problem Gambling

Aims and Phase One Overview

The first phase of this survey involved telephone interviews with 4,053 adults, chosen at random on a 'next birthday' basis, from private dwellings with a residential telephone. Telephone directory listed numbers selected were incremented by one digit in order to include people with unlisted numbers. Māori and Pacific Islanders were over-sampled. Up to eight calls were made to each household, five to establish contact and three to the eligible respondent if necessary. The sample was subsequently weighted to reflect the expected age, gender and household size characteristics of the New Zealand population aged 18 years and over. The response rate was reported as 66 percent. When households and selected respondents that could not be contacted were included in the calculation, the rate was 59 percent. However, this latter rate is overly conservative because it contains an unknown number of people who would not have been eligible to participate. The rate, if adjusted to account for this group, would probably be somewhere between 60 to 62 percent.

The aims of the 1991 national survey were to:

- Determine the lifetime and current prevalence rates of problem and pathological gambling in the New Zealand population
- Identify demographic, social and other factors that discriminate between pathological gamblers and other people
- Compare the current participation of the adult population in various types of gambling and the prevalence of problem and pathological gambling with the findings of North American prevalence surveys
- Provide a baseline to enable assessment of future changes in the prevalence of problem and pathological gambling and gambling activities generally, within the adult New Zealand population
- Provide information to assist public policy decisions about the legislation and promotion of new forms of gambling, as well as the provision of services to problem and pathological gamblers.

The SOGS-R was the main measure of problem gambling used in the 1991 survey. As mentioned in Chapter One, this instrument was an adaptation of the SOGS, modified for the study so that both current (past 6 months) and lifetime prevalence estimates could be obtained.

Phase One: Selected Findings

From the survey, it was estimated that:

- 5 percent of adults had never gambled
- 18 percent were regular (weekly or more) participants in continuous forms of gambling
- 30 percent were regular participants in non-continuous forms
- 41 percent were less frequent (past 6 months but not weekly) participants in continuous and/or non-continuous forms
- 6 percent were infrequent (not in past 6 months) gamblers.

The problem gambling prevalence estimates were:

- 1.2 (0.9-1.5) percent current probable pathological gamblers
- 2.1 (1.6-2.6) percent current problem gamblers
- 2.7 (2.2-3.2) percent lifetime probable pathological gamblers
- 4.2 (3.6-4.8) percent lifetime problem gamblers.

Regular participation in continuous forms of gambling, especially gaming machines, betting on horse or dog races, and Instant Kiwi, were strongly associated with probable pathological and problem gambling.

Major sociodemographic risk factors for probable pathological and problem gambling included:

- Unemployed status
- Māori or Pacific Island ethnicity
- Being under the age of 30 years
- Non-married
- Male gender
- Low occupational status
- Having a parent with gambling problems.

Phase Two: Aims and Overview

In Phase Two of the 1991 national survey, sub-samples totalling 217 were recruited from the Phase One sample and interviewed in greater depth, face-to-face. Four groups were selected, namely:

- Frequent non-continuous gamblers who scored less than three on the lifetime SOGS-R (n = 50)
- Frequent continuous gamblers who scored less than three on the lifetime SOGS-R (n = 50)
- Lifetime problem gamblers (people with scores of 3 or 4 on the SOGS-R) (n = 52)
- Lifetime probable pathological gamblers (people with scores of 5 or more on the SOGS-R) (n = 65).

The first two groups were selected at random from Phase One respondents living in the three major New Zealand metropolitan centres (Auckland, Wellington/Hutt and

Christchurch). Attempts were also made to recruit problem gamblers from these centres. Although the large majority of Phase Two problem gambler participants did come from these three centres, a small number were drawn from surrounding provincial areas. Given their relative scarcity, attempts were made to recruit all Phase One probable pathological gamblers, irrespective of where they lived. The decision to restrict the selection of people in the first three groups to particular areas was based on cost constraints.

Of the 320 respondents selected from Phase One, 278 were successfully contacted. Of these, 217 were interviewed. Thus, the overall response rate was 68 percent. However, the rate varied somewhat across the four groups. It was 76 percent for frequent non-continuous gamblers, 68 percent for frequent continuous gamblers, 58 percent for lifetime problem gamblers and 71 percent for lifetime probable pathological gamblers.

Phase Two interviews were conducted two to three months after the Phase One interviews. Neither the interviewers nor the interviewees knew what groups the latter belonged to. In other words, these interviews were conducted double blind. At the time of recruitment, participants were informed that the follow-up interviews would involve asking them about how their gambling involvement had developed and what positive and negative effects gambling had had on their lives.

Consideration was given to using clinical interviewers for the Phase Two interviews, but rejected. At the time of the study, few New Zealand mental health professionals had had experience with the assessment and treatment of pathological gambling. Furthermore, Dickerson (personal communication with the author, 1990), in Australia, had found that 95 percent of regular gamblers interviewed in a similar way to the Phase One participants said they would accept a residential interview if it was conducted by someone from the same company. Only 45 percent said they would agree to a subsequent interview by university researchers. In these circumstances, the wish to obtain a high response rate and the additional cost of employing and training clinical interviewers had to be balanced against the desirability of obtaining clinical assessments made by academic researchers or clinicians.

A major aim of Phase Two was to validate the SOGS-R in a general population setting and to enable more accurate estimation of the current prevalence of pathological gambling in New Zealand. Additional aims included:

- Determining the degree to which frequent gambling, problem gambling and pathological gambling are associated with problems in other life spheres
- Assessing whether or not participation in certain forms of gambling is more strongly associated with gambling and gambling-related problems
- Describing the developmental history of gambling problems among problem and pathological gamblers
- Examining the type and outcomes of help-seeking behaviour by people who are identified as problem or pathological gamblers.

The questionnaire developed to gather information pertinent to these aims included the following sections:

- Structured and semi-structured questions concerning recent gambling participation, expenditure and reasons for gambling

- Structured and semi-structured questions concerning gambling participation and changes to gambling behaviour at major life stages (e.g. when respondents first started gambling, after leaving school, following marriage or marriage-like relationship, after the arrival of children, after becoming unemployed and following retirement)

- Six groups of questions to assess perceived costs and benefits of gambling in the following domains: personal, interpersonal, employment, financial, legal and gambling participation/experience

- Standardised self-completion screening instruments for non-psychotic mental disorder (12 item version of the General Health Questionnaire) and depressive symptomatology (Beck Depression Inventory)

- A standardised self-completion measure of hazardous alcohol consumption (AUDIT).

Following the completion of each interview, interviewers completed an assessment based on their overall impression of interviewee responses to questions and their own observations, using a checklist of DSM-III-R diagnostic criteria for pathological gambling.

Although the Phase Two response rate was acceptable (68%) for a study of this type, there was the possibility that those who were re-interviewed differed in some significant way from their Phase One counterparts who were not re-interviewed. Variables used to assess the representativeness of the Phase Two sample included gender, age, ethnicity and current and lifetime SOGS-R scores.

In the case of the frequent non-continuous, continuous and problem gambler groups there were no statistically significant differences between the interviewed and non-interviewed participants. However, significant differences were found for the probable pathological gamblers with respect to ethnicity and past six months SOGS-R scores. Specifically, whereas most Māori probable pathological gamblers were re-interviewed, only half of the Pacific Islanders and two-thirds of the people of other ethnicities were. While they did not differ with respect to lifetime SOGS-R scores, re-interviewed respondents were more likely than those who were not re-interviewed to be currently non-problematic. This suggests that lifetime problem gamblers who were experiencing gambling problems at the time attempts were made to contact them were more difficult to contact or more likely to decline to participate further in the study.

Performance of the SOGS-R in Relation to Interviewer DSM-III-R Assessments

Because the original SOGS was developed as a clinical tool rather than as a measure for use in community surveys, one purpose of Phase Two was to increase understanding of how this screen and the revised version incorporating the six month scale performed in a general population setting. In Phase Two, 21 pathological gamblers were identified using DSM-III-R interviewer assessments. For validation purposes, it was assumed that

these assessments were more accurate than the SOGS-R (Abbott & Volberg, 1992; 1996).

Based on the assumption that these 21 participants were 'true' pathological gamblers, it was determined that the lifetime SOGS-R correctly identified 18 (86%) of them. A further two were identified by the lifetime SOGS-R as problem gamblers and the remaining participant scored in the non-problem range. In other words, 86 percent were true positives (lifetime probable pathological gamblers who were assessed to be pathological gamblers by the Phase Two double blind interviewer ratings) and 14 percent were false negatives (lifetime non-problem gamblers who were assessed by the Phase Two interviewers as pathological gamblers). These findings indicate (assuming that the interviewer assessments are accurate) that the lifetime SOGS-R has high sensitivity - it is very good at detecting serious gambling problems among those who have such problems.

However, while the lifetime SOGS-R was found to have high sensitivity, it achieved this at the expense of generating a large number of false positives (lifetime probable pathological gamblers who were assessed by the Phase Two interviewers as non-pathological). To be more precise, 47 of the 196 participants found by the interviewers to be non-pathological were false positives, a rate of 24 percent. The remaining 149 participants were true negatives, people who were classified as non-pathological gamblers by the lifetime SOGS-R and who were also found by the Phase Two assessors to be non-pathological gamblers. This means that the true negative rate was 76 percent.

Overall, the lifetime SOGS-R was found to correctly classify 77 percent of the study group that was reassessed in Phase Two of the 1991 national survey. This overall measure is referred to as the screening instrument's efficiency.

Two additional measures are relevant to consideration of SOGS-R performance as a screening tool. The first is its positive predictive value. The positive predictive value is calculated by dividing the number of lifetime SOGS-R true positives (18) by the sum of the true positives (18) and false positives (47). Thus, the positive predictive value is 0.28. In other words, 28 percent of the lifetime SOGS-R probable pathological gamblers were confirmed by the interviewers as 'true' pathological gamblers.

The other measure is the negative predictive value, which is calculated by dividing the number of true negatives (149) by the sum of the true negatives (149) and false negatives (3). This yields a negative predictive value of 0.98, meaning that 98 percent of the lifetime non-pathological gamblers were confirmed as 'true' non-pathological gamblers by the interviewers.

The overall efficiency of the lifetime SOGS-R may be considered reasonable for some purposes and the high negative predictive value is impressive. These properties of the SOGS-R indicate that the lifetime SOGS-R, and presumably the original SOGS, work well as screens for identifying cases of serious problem gambling in the community. While it incorrectly picks up large numbers of people who do not apparently have significant gambling problems, it misses very few people who do have problems. This means that the screen should be particularly valuable in situations where people are being filtered for further examination prior to intervention. However, the high rate of false positives and resulting low positive predictive value is of concern when the screen is being used to estimate the prevalence of pathological and problem gambling in the

general population. It suggests the screen may over-estimate the prevalence of serious gambling problems (Abbott & Volberg, 1996).

The past six month (current) SOGS-R scale was similarly examined. In contrast to the lifetime SOGS-R, the current scale had a more satisfactory positive predictive value (0.40 compared to 0.28). However, only ten of the 21 Phase Two interviewer-determined 'pathological' gamblers scored within the probable pathological range on the current SOGS-R. In other words, 48 percent were true positives, considerably less than the 86 percent produced by the lifetime SOGS-R. This means that the current scale had much lower sensitivity and that the higher positive predictive value did not result from the current scale performing better in picking up people with problems. The reason for the higher positive predictive value was a consequence of the considerably lower rate of false positives (8% compared to 24%).

The lower true positive rate is matched by a higher false negative rate. Fifty-two percent of the interviewer-assessed 'pathological' gamblers did not score within the probable pathological range on the current SOGS-R, compared to 14 percent in the case of the lifetime scale. Similarly, the lower number of current false positives (8%) meant that there was a corresponding increase in the number of true negatives (92% compared to 76% for the lifetime scale). Whereas the current scale had a higher positive predictive value the than lifetime scale (0.40 compared to 0.28), it had a somewhat lower negative predictive value (0.94). In other words, it did less well in correctly identifying people who did not have problems. The current SOGS-R scale correctly classified 94 percent of the current non-pathological gamblers who were not assessed by the Phase Two interviewers as having significant problems. It will be recalled that the negative predictive value for the lifetime scale was 0.98.

The current scale had higher efficiency than the lifetime scale (88% compared to 77%). Overall, it did better in classifying problem and non-problem gamblers. While having higher efficiency overall, the current scale's lower sensitivity means that it would be expected to perform much worse than the lifetime scale in screening people with potential gambling problems for further investigation. Based on the analysis reported here, whereas the lifetime measure would detect 86 percent of the 'true' pathological gamblers (95% if problem gamblers with SOGS-R scores of 3 or 4 were also included), the current measure would detect only 48 percent. In a screening situation, while use of the current measure could be expected to greatly reduce the number of people without problems who would otherwise be examined further, this gain would be more than offset by the failure to detect over half of the people who have significant gambling problems.

Revision of the Phase One Prevalence Estimates

Drawing on the information outlined above, Abbott and Volberg (1992; 1996) used a standard epidemiological approach (the efficiency method) to refine their Phase One current probable pathological gambling prevalence estimate. The most conservative estimate, using this procedure, was 1.2 percent. This is the same as their original estimate. The authors also concluded that they had confirmed the confidence half interval applying to this estimate (0.3%).

Abbott and Volberg (1992) used the positive predictive value method, another standard epidemiological procedure, to refine the Phase One lifetime probable pathological gambling prevalence estimate. This method requires some information that was not

available from Phase Two, namely accurate specificity data. Specificity refers to a measure of the rate at which a screen detects true and false negatives. This could not be accurately determined because, it will be recalled, not all sectors of the sample were represented in Phase Two. Samples of occasional and non-gamblers were not included and re-assessed. Consequently, specificity data from two United States samples that formed part of the original validation of the SOGS were used, in conjunction with the positive predictive value and sensitivity rate from the New Zealand study. These analyses generated two different lifetime prevalence estimates, depending on which American study the specificity data were taken from. These estimates, 0.31 percent and 3.7 percent, framed the original Phase One estimate of 2.7 percent.

Critiques of the Revised Phase One Prevalence Estimates

Subsequent to its publication, aspects of the data analysis employed in Phase Two of the 1991 national survey have been critiqued. Mathematical statisticians Manly and Gonzalez (1993) demonstrated that conventional textbook formulae for the construction of prevalence estimate confidence intervals do not apply to the data generated by the particular two-stage sampling method used. Using computer simulation, a more appropriate confidence interval was constructed for the current prevalence estimate. This interval was 0.6 to 3.2 percent and was non-symmetrical in that it extended much further above the point prevalence interval of 1.2 percent than it did below it. It should be noted that this revised confidence interval was based on an analysis using unweighted data; it did not take into consideration the difference between the sample and the adult New Zealand population with respect to age, gender and household size. The use of weighted data, which would have complicated the formulae and associated calculations, could be expected to modify the revised confidence interval somewhat. Manly and Gonzalez did not query the original point prevalence estimate of 1.2 percent per se.

More recently, Gambino (1999a) has argued that in calculating their revised prevalence estimates, Abbott and Volberg (1992) "committed a not uncommon epidemiologic error" of verification or referral bias (p.223). Gambino correctly notes that the selection of participants for verification using second stage assessment introduces a bias that requires statistical correction. Abbott and Volberg's calculations were based on the incorrect assumption that the entire Phase One sample had been re-assessed. When this bias was removed, the revised lifetime pathological gambling prevalence estimate was 2.7, identical to that obtained by Abbott and Volberg (1991) directly from the Phase One survey.

Gambino's finding that there was no change in the lifetime prevalence estimate is of interest given the assertion by Dickerson (1993), Walker (1992) and others that the SOGS and SOGS-R will inevitably produce large numbers of false positives when used in community rather than clinical settings, and that this will mean that such estimates are grossly overestimated. A rise in false positives is expected because of the much lower base rate of pathological gambling in the general population as opposed to clinical or other settings that contain high proportions of pathological gamblers (Abbott & Volberg, 1999a). However, it does not follow that this increase in false positives will result in inflated, erroneous prevalence estimates. As Gambino (1997) has previously explained:

> The argument that the SOGS overestimates prevalence because it generates excess false positives represents an incompletely specified logical mode. While

> false positives are a necessary condition for overestimation, they are not a sufficient condition. It must also be the case that false negatives are not equal to or greater than the number of false positives (p.346).

In the present situation, although the lifetime SOGS-R produced a high false positive rate, no change in prevalence resulted because false negatives balanced the increase in the number of false positives.

Gambino (1999a) also provided a revised current prevalence estimate for the 1991 national survey. In this instance, the original and revised estimates were not the same. The revised estimate of 6.4 percent was substantially higher than the Phase One and incorrectly revised Phase Two estimates of 1.2 percent. Earlier it was noted that the lifetime SOGS-R, relative to the lifetime SOGS, produced a large number of false negatives. This high rate of false negatives was responsible for the upward prevalence revision.

Consideration of the Prevalence Revision Critiques

Gambino's upward revision is potentially important because, in recent years, the great majority of problem gambling surveys internationally have used the current SOGS-R measure (albeit with a 12 rather than 6 month timeframe) or an alternative current measure based on DSM-IV diagnostic criteria (Abbott & Volberg, 1999a). While Dickerson (1993) maintains that prevalence estimates from these surveys are inflated, Gambino's re-examination of Abbott and Volberg's (1991; 1992) data suggest that they may, in fact, greatly underestimate the number of serious problem gamblers in the community. Although this may well be the case, Abbott and Volberg (1999b) caution that there are a number of reasons why the revised current estimate may not, in fact, be an improvement on the uncorrected Phase One estimate.

Whether or not accuracy is enhanced from the use of multiple assessments of problem gambling in single-, two- or multi-stage designs is heavily dependent on the accuracy of the procedures used and the sample sizes involved for each assessment. While Abbott and Volberg (1992; 1996) took the Phase Two interviewer assessments as the 'gold standard' for pathological gambling, they were aware that this measure was most unlikely to be free of error.

They stated that for the purpose of refining their Phase One estimates, three assumptions were made, namely that:

- the interviewer assessment using DSM-III-R is a valid measure of 'true' pathological gambling
- the four groups in the phase two sample are representative of the corresponding four groups in the phase one sample, and that
- the fifth group in the phase one sample, made up of people who stated that they did not gamble weekly on any gambling activities, includes no current pathological gamblers (Abbott & Volberg, 1992, p. 36).

With respect to the DSM-III-R assessment, although completed following lengthy interviews that included detailed questions concerning past and present gambling and

gambling-related problems, the interviewers were not clinicians. Furthermore, inter-rater reliability was not determined. Thus, uncertainty prevails with respect to whether or not the interviewer assessments were, in fact, a more accurate measure of problem gambling than the SOGS-R.

In addition to the foregoing, it is important to recall that DSM pathological gambling diagnoses are lifetime measures - the diagnostic criteria may have been met at any time during the interviewee's life. In the 1991 national survey, the Phase Two interviewer assessments were based on each participant's account of his or her cumulative lifetime experience of gambling-related problems. While the SOGS and lifetime section of the SOGS-R involve questions that could be expected to elicit responses that relate to respondents' cumulative lifetime experiences, the SOGS-R current section involves questions phrased in a "last six months" format. For this reason, it could be expected that the lifetime SOGS-R would be a better proxy for a DSM-III-R assessment than the current measure. This implies that, while it was not unreasonable to examine how the current SOGS-R performed relative to the DSM interviewer ratings, Abbott and Volberg (1992) erred in suggesting that these ratings could serve as a valid criterion measure for the current SOGS-R.

Some of the Phase Two findings reported earlier provide support for the view that the interviewer assessments are more appropriately regarded as a criterion measure for the lifetime SOGS-R than for its current counterpart. For example, the lifetime SOGS-R produced only three (14%) false negatives and two of the three fell just short of the cut-off score for probable pathological gambling and were classified as problem gamblers. Re-analysis of the Phase Two data provides further support for the view that the lifetime SOGS-R has a stronger relationship with the DSM-III-R ratings than does the current SOGS-R. Performance on the two 'lifetime' measures have a Spearman's Rho correlation of 0.54 whereas performance on the current SOGS-R and ('lifetime') interviewer ratings have a lower correlation of 0.41 (Abbott & Volberg, 1999b).

The bottom line of this discussion is that, unless it can be demonstrated that the interviewer ratings provide a more accurate measure of the underlying construct (pathological gambling) than the SOGS-R screen, the assumption that the corrected estimate is actually an improvement on that provided by the screen alone must be tempered with a high degree of caution. Rather than using the ratings as a 'gold standard' or criterion measure, Abbott and Volberg (1999b; p.239) argue that, in hindsight, it would have been prudent to regard them as "an alternative measure of the lifetime pathological gambling construct."

With respect to their second assumption concerning the re-interviewed Phase One participants, Abbott and Volberg (1996) noted that the SOGS-R lifetime probable pathological gambler participants were not fully representative of the Phase One sub-sample. There was differential attrition of Pacific Islanders and lifetime probable pathological gamblers who reported being currently problematic. This complicates the use of Phase Two categorisations to refine the Phase One prevalence estimates.

The third assumption, that Phase One participants not reporting regular weekly gambling contained no current pathological gamblers, is probably conservative. For example, some problem gamblers may under-report their gambling behaviour. Others may engage in irregular 'binge' patterns of problematic gambling that would place them in the irregular

or infrequent gambling category. However, there are no available data to make a clear determination on this matter.

Drawing the foregoing considerations together, it is concluded that while Gambino specifies and employs appropriate statistical procedures to refine the 1991 national survey prevalence estimates, little confidence can be placed in the resulting revised current prevalence estimate. This conclusion is further supported by the size of the revised current estimate (6.4%) relative to the revised lifetime estimate (2.7%). Abbott and Volberg (1999b) state:

> While this outcome is statistically possible, logically, in the real world, current prevalence cannot be higher than lifetime prevalence. This can only come about if one or both of the estimates are incorrect. As indicated, we do not regard the lifetime interviewer rating as an appropriate criterion for the validation of the current SOGS-R. We consider it probable that the lifetime estimate is the more accurate of the two and that the current estimate will therefore be somewhat lower. Typically, current SOGS-R estimates are approximately half their lifetime counterparts. We thus conclude that 1.2 percent remains the best available current point estimate for the adult New Zealand population (p.239-240).

Confidence Intervals for Second Phase Adjusted Prevalence Estimates

In his critique of Abbott and Volberg's (1992; 1996) revised prevalence estimates, Gambino (1999a) does not make reference to another important matter that requires consideration in prevalence estimation, namely the size of confidence intervals that apply to the point estimates. Confidence intervals are important because they provide a measure of the degree of certainty associated with the estimates.

As mentioned earlier, Manly and Gonzalez (1993) have considered this aspect of the 1991 national survey prevalence revisions. Their revised confidence interval of 0.6 to 3.6 percent was considerably larger than Abbott and Volberg's original interval of 0.9 to 1.5 percent and was nonsymmetrical. Assuming that the method used to revise the 1991 current probable pathological gambling point prevalence estimate was valid (and it has been argued that it was not), this would mean that somewhere between 12,000 to 68,000 New Zealanders experienced serious gambling problems in 1991. This range is sufficiently wide to suggest that only modest confidence can be placed in the point prevalence estimate obtained from the additional Phase Two information.

An implication of the discussion of Gambino's (1999a) and Manly and Gonzalez's (1993) reports is that while double sampling designs provide an opportunity to improve point prevalence estimates, if only a subset of phase one participants are reassessed, there is a tradeoff against increased variance and reduced certainty that the revised estimate is accurate. Gambino (1999b), in response to this point, has provided equations to compute confidence intervals for the results of second stage verification, including situations where the prevalence is near to zero or one. He also gives formulae to determine the most efficient sample sizes required to minimise second stage variance estimates.

Some Other Phase Two Findings

Although Phase Two of the 1991 national survey was in part designed with the intention of using the interviewer assessments of pathological gambling to refine the Phase One prevalence estimates, the Phase Two interviews were principally a vehicle to gather more detailed information about participants' past and current gambling participation, gambling problems, co-morbidity and other aspects of their lives. This information is also relevant to the construct validation of the SOGS-R and other problem gambling measures employed in the study.

Phase Two respondents (who were all either probable pathological, problem or regular non-problem gamblers) were asked if they could recall seeing or hearing advertisements for any type of gambling. Almost 90 percent recalled Lotto advertising, followed in descending rank order by Instant Kiwi, horse racing/TAB, lotteries and raffles. Only three percent of the Phase Two respondents could not recall some form of gambling advertising.

Phase Two respondents were asked, unprompted, to indicate their preferred form of gambling. Most (70%) of the frequent non-continuous gamblers mentioned Lotto. This was also the most frequently reported preference (42%) of the regular continuous gamblers. Twenty percent of the continuous gamblers mentioned betting on horse or dog races and 14 percent Instant Kiwi. Housie and gaming machines were both mentioned by six percent of this group. Corresponding figures for regular non-continuous gamblers were eight percent, four percent, zero percent and six percent.

It is of interest that many (44%) of the regular (frequent) continuous gamblers reported that they preferred a non-continuous form and that they typically engaged in these forms of gambling weekly or more often. Similarly, as indicated, some (28%) of the regular non-continuous gamblers preferred a continuous form, even though they engaged in non-continuous forms less than once a week.

Respondents were also asked about their frequency of participation. Ninety-eight percent of the non-continuous gamblers reported that they frequently bought Lotto tickets. Eighty percent of the continuous gamblers also reported frequent Lotto participation. Continuous gamblers also reported levels of participation in other forms of non-continuous gambling that were similar to those of non-continuous gamblers.

Whereas regular continuous and non-continuous gamblers indicated that, apart from Lotto, they engaged in non-continuous forms of gambling at similar frequencies, continuous gamblers differed from non-continuous gamblers with respect to the frequency with which they took part in continuous forms. It will be recalled that, by definition, continuous gamblers took part weekly or more often in at least one type of continuous gambling. People in this category also generally reported spending more time and money on most forms of gambling, especially continuous forms.

In both the 1991 Phase One and Phase Two surveys, regular continuous and non-continuous gamblers gave winning money as their main reason for gambling, followed in descending rank order by entertainment or fun, socialising, excitement or challenge, as a hobby and to support worthy causes. Continuous gamblers more often said their gambling was a hobby (22% versus 12%) or that they gambled to socialise (34% versus 24%). They less often said they gambled for excitement or challenge (20% versus 34%).

Continuous gamblers somewhat more often than non-continuous gamblers said they first started gambling before the age of 18 years (52% versus 40%). Betting on horses or dogs, lotteries, raffles and card games were most often mentioned as the forms first engaged in.

The report on Phase Two of the 1991 national survey focused mainly on comparisons between the problem and non-problem gamblers, defined on the basis of their SOGS-R scores or DSM-III-R interviewer assessments.

Relative to non-pathological gamblers, the interviewer assessed pathological gamblers much more often expressed a preference for continuous rather than non-continuous forms of gambling, especially betting on horse and dog races. SOGS-R defined problem and probable pathological gamblers and interviewer assessed pathological gamblers reported much higher levels of frequent participation in track (horse and dog race) betting, gaming machines and taking money bets with friends and work-mates. They also reported spending substantially more money per typical gambling session on horse or dog racing than non-problem gamblers and more often indicated that they gambled for excitement or challenge.

Interviewer assessed pathological gamblers, especially those aged 30 years or younger, reported much longer gaming machine sessions and more often indicated that they gambled because it was beyond their control, for example, "it's like a drug," I'm hooked," "it's born in me." Relative to other participants, this group also was more likely to report that they:

- Started gambling before the age of 18 years
- Commenced gambling on gaming machines
- Gambled more than once a week from the time they first started gambling
- Spent more time per gambling session from the beginning of their gambling careers
- Experienced a 'big win' of NZ$1,000 or more.

The younger group of pathological gamblers (those aged 30 years or less), apart from gaming machine session lengths, also differed from their older counterparts in that they reported higher levels of involvement in gaming machines, Instant Kiwi and Lotto. The older group reported greater involvement in both track betting and card games. The younger group also reported that they started gambling at a younger age and their problems appear to have developed more rapidly. They also more often reported gambling with other people rather than alone and that they gambled to socialise and to win money.

Phase Two respondents were asked to describe their gambling participation following various past major life transitions - leaving school, marriage/de facto relationship, arrival of children and leaving work (unemployment/retirement). Both the non-pathological and interviewer-assessed pathological gamblers reported fluctuations in their gambling involvement over time. Of the major life transitions, leaving school was most often associated with increased involvement for both groups, but especially the pathological gamblers. The arrival of children, on the other hand, was associated with a substantial net reduction in reported participation. Thirty-eight percent of the pathological gamblers and 32 percent of non-pathological gamblers said that their gambling participation

decreased or stopped at this time. Only five and two percent, respectively, said their gambling increased. A similar reduction (38%) was evident for the former group following retirement or unemployment. However, a minority (19%) reported increased involvement at this time.

Particular forms of gambling involvement also varied across the life stage transitions. One finding of potential significance was that whereas pathological gamblers' participation in track betting was reported to increase following the formation of a couple relationships and the arrival of children, their reported gaming machine participation declined substantially. However, in both the pathological gambling and non-pathological gambling groups, reported track betting declined following retirement or unemployment. Taking bets with friends or work-mates also reduced for both groups at these times.

Pathological gamblers, but not non-pathological gamblers, also reported substantial reductions in gambling expenditure and the amount of time spent on typical gambling sessions following the arrival of children. However, for pathological gamblers typical session length increased following retirement or unemployment. In contrast, for non-pathological gamblers, reported session lengths were shortest in these situations.

As discussed in Abbott and Volberg (1999a), the methodology used in this section of the Phase Two survey, namely retrospective accounts of life history, is at best a crude proxy for the prospective investigation of change over time. Information gathered in this way is prone to memory distortions. In the current situation, the findings and their interpretation are further confounded because the respondents are of varying ages and cohort (generational) effects are likely to be significant. In addition, in the case of the interviewer-determined pathological gamblers, the sample size is small. However the findings from this section, while fragile and tentative, do point to matters of potential significance and generate hypotheses that warrant further investigation.

Phase Two participants were also asked a variety of questions concerning the perceived benefits and costs of their gambling participation. These questions were grouped within the following categories: personal, interpersonal/family, vocational/employment, financial, legal, and gambling characteristics.

The majority of both interviewer-assessed pathological gamblers and non-pathological gamblers indicated that gambling often or always provided them with pleasure or fun and that they daydreamed about getting "a big win." Many of the non-pathological and most of the pathological gamblers regarded gambling as a hobby and an interest.

Pathological gamblers were much more likely than non-pathological gamblers to say that gambling provided a focus for work and family-related conversation and social activities, enabled them to cope with boredom, provided excitement and obtained money. They also more often said that they often or always:

- Used gambling to escape from feeling depressed
- Felt depressed after losing heavily at gambling
- Felt that their gambling was a problem.

In addition, responses of the pathological gamblers to a number of questions indicated that they had impaired control over their gambling. For example, the majority reported

that they had at some time spent more than they could afford gambling and that they gambled to win money to pay off gambling debts.

Overall, while the pathological gamblers reported adverse impacts on various spheres of their lives, the level of disruption was lower than that found in studies of problem gamblers in treatment settings or participating in mutual help organisations (Abbott & Volberg, 1999a). Lower levels of gambling-related criminal behaviours were mentioned than in these other settings. For example, only ten percent of pathological gamblers said that their gambling had led to problems with the police. This may have been a consequence of people studied in other settings having more serious gambling problems and/or being more willing to disclose sensitive information such as their offending history.

Almost half (48%) of the pathological gamblers relative to eight percent of the other participants reported that they, themselves, felt that they had a gambling problem at some time. On average, they first considered that they had a problem seven to eight years prior to being interviewed. Of all the people who considered that they had a gambling problem at some time, only eight percent said that they had ever sought help. In these cases, help had been sought from family members or other non-specific, non-professional sources. No participant reported having sought or received professional treatment or counselling for problem or pathological gambling.

Fifty-nine percent of the non-pathological gamblers and 76 percent of the pathological gamblers said they knew at least one other person with a gambling problem. These people were much more likely than was the case with non-pathological gamblers to be living in the respondent's own household. Eleven percent of the 132 people who indicated that they knew someone with a problem reported that they had sought assistance for them. All bar one of these people said they had consulted friends, family or other non-professional sources. Half had contacted Gamblers Anonymous, GAMANON, a general medical practitioner or a therapist or counsellor.

As mentioned earlier, the Phase Two questionnaire included screens for psychiatric co-morbidity. The interviewer-assessed pathological gamblers had rates of minor mental disorder and depressive symptomatology that were more than double those of the non-pathological gamblers. They had rates of hazardous or harmful alcohol use that were significantly higher than those of the non-pathological gamblers.

The 1991 national survey was conducted following a three year period when official gambling expenditure on major forms of legal gambling in New Zealand had more than doubled. Abbott and Volberg (1992) speculated that during this period, problem gambling may also have increased in prevalence, especially among those groups that they found in 1991 to have higher levels of regular involvement in continuous forms of gambling. These groups, for example, young males, Māori, Pacific Islanders and unemployed people, also had elevated problem and probable pathological gambling prevalence rates (Abbott & Volberg, 1991; 1996).

Support for the view that problem gambling had increased among young people was provided by the 1991 survey finding that younger adults had much higher lifetime probable pathological and problem gambling prevalence rates than older adults. Abbott and Volberg could not find any likely explanation for this finding other than that the 1991 cohort of adults aged 30 years and younger at that time had higher rates than older

adults had in the past. This interpretation was reinforced by the additional finding that the younger adults' current prevalence rates were also higher than older adults' lifetime rates.

Abbott and Volberg (1992, p.12) concluded:

> Given the latency period between starting gambling on a regular basis and the development of problems, it is likely that the present study was conducted too soon to capture the full impact of increased gambling participation on the prevalence of problem and pathological gambling within the community. It is expected that there are large numbers of people still in the 'pipeline' who will progress from regular or problem gambling to pathological gambling during the next few years. Demographic projections indicate that the percentage of Māori and Pacific Islanders in the total population will increase. Increases in unemployment are also forecast for the next few years especially among young people. These changes will contribute to the 'pipeline' effect and further inflate prevalence rates throughout the remainder of the present century. Associated health, social and financial costs will similarly increase. The introduction of casinos and other new forms of gambling, as well as the more aggressive marketing of gambling activities, will also contribute to increased participation and very probably to increased prevalence rates.

Abbott and Volberg (1992) recommended further national prevalence surveys, repeated at regular intervals, to assess the validity of this prediction, monitor prevalence over time and examine possible changes in risk factors for problem gambling. They also pointed out the importance of undertaking longitudinal surveys to assess the 'natural history' of problem gambling, determine the incidence of problem gambling and allow stronger inferences to be drawn with regard to the possible causal role of identified risk factors in problem gambling development.

The 1998 Longitudinal Survey

Introduction

As mentioned in Chapter One, the second volume in the NZGS publication series includes a report on 143 1991 Phase Two participants who were re-interviewed in 1998 (Abbott, Williams & Volberg, 1999). These people, in 1991, were either frequent (weekly or more often) gamblers without gambling problems or lifetime problem or probable pathological gamblers. This study was primarily concerned with advancing knowledge about the nature of gambling in the general adult population, particularly with respect to the definition and measurement of gambling and problem gambling, the stability and change over time in these behaviours and the identification of factors that are associated with this stability and change.

Prior to summarising some of the main findings from this study, it is important to note that given the relatively small size of the sample, the way in which it was derived from the larger 1991 sample, participant attrition from 1991 to 1998 and the fact that by 1998 all participants were aged 25 years or older, means that caution must be exercised with respect to the generalisation of these findings to people with similar attributes living in the general population. With this proviso, the findings are of particular interest because

this is the only prospective investigation, to date, of frequent and problematic gamblers drawn from the general population rather than a clinical setting.

Gambling Participation Findings

Overall, participants reported decreases in the frequency of their gambling participation from 1991 to 1998 in forms that had been available since 1991. This was especially the case with Instant Kiwi, a form of instant lottery. Casino gambling participation increased most, although only six percent of respondents mentioned that this was their preferred form of gambling. Two new non-continuous forms, TeleBingo and Daily Keno, were relatively popular in 1998. The finding of net reported reductions was consistent with participant assessments of whether or not their gambling had increased, stayed the same, or decreased. While total reported gambling expenditure for the study group as a whole increased slightly from 1991 to 1998, no increase was evident when changes to the purchasing power of the dollar was considered.

The most frequently mentioned reasons given by participants for reduced gambling participation included 'lack of finances,' 'change of environment/lifestyle,' 'increased awareness/older and wiser' and 'lack of interest'. People in the lifetime probable pathological and problem gambling categories in 1991 also mentioned getting married, having a family or marriage breakups as reasons for changed gambling behaviour. Reasons given for increased participation included 'more finances/better income,' 'more opportunities/options' and 'something to do/day out.'

The largest reductions in both reported participation and self-assessed change were found among 1991 lifetime problem and probable pathological gamblers. These participants reported especially large reductions in non-casino gaming machine participation. It will be recalled that frequent participation in this form of gambling particularly characterised younger pathological and problem gamblers in 1991. With the exception of Instant Kiwi, 1991 non-problem frequent gamblers did not report significant reductions, over time.

Changes in Problem Gambling Status

Quite high rates of reported change in problem gambling status from 1991 to 1998 were evident with respect to current probable pathological and problem gambling status. Only 23 percent of the 1991 SOGS-R defined current probable pathological gamblers retained this status when they were re-assessed seven years later. However, a further 31 percent were classified as current problem gamblers, indicating that over a half continued to experience gambling problems to varying degrees. Of the remainder, i.e. people who were non-problematic in 1998, equal numbers were regular continuous, regular non-continuous and infrequent or non-gamblers.

1991 current problem gamblers were found to have very high rates of change over time, supporting the notion that this is an 'in transition' state. Only nine percent remained in this category in 1998. A slightly larger number, 14 percent, were classified as current probable pathological gamblers in 1998. This finding is consistent with the view that people in this score range are at risk for the development of more serious gambling problems. However, three-quarters were found to be non-problem gamblers, suggesting that most people in this category transition to a non-problematic state. Over half of those without significant problems in 1998 were regular non-continuous gamblers. The

remainder were evenly divided between regular continuous and infrequent or non-gamblers.

Regular continuous gamblers were also found to be highly prone to change over time. Only 23 percent retained this status seven years later. Many (48%) became frequent non-continuous gamblers, others (21%) became infrequent or non-gamblers and the remaining eight percent became current probable pathological or problem gamblers. This suggests that this group also has an elevated risk for problem development although the majority switch to non-continuous forms or greatly reduce their frequency of gambling participation in continuous and/or non-continuous forms.

Regular non-continuous gamblers were much more likely than the three previous groups to retain their 1991 gambling participation status. Fifty-nine percent remained in this category in 1998, 20 percent moved into the infrequent or non-gambler category and 16 percent became frequent continuous gamblers. Four percent became current probable pathological or problem gamblers.

When classified on the basis of 1991 current SOGS-R scores rather than lifetime scores, a fifth sub-sample of participants was created. These were lifetime probable pathological gamblers who reported that they no longer gambled or gambled infrequently during the six months prior to their 1991 interviews and who, during that period, did not experience significant gambling problems. Like the previous group, the majority of these participants (63%) retained their 1991 status. A significant minority (31%) became frequent continuous gamblers in 1998, none became frequent non-continuous gamblers and six percent became current problem gamblers.

The findings reported to this point suggest that while some participants increased their gambling involvement from 1991 to 1998, the majority reduced their gambling participation or switched to weekly or more frequent gambling in non-continuous forms only. This was especially so for people who had experienced significant gambling problems in the past or who were non-problem frequent continuous gamblers in 1991. These findings are of interest given that new forms of gambling including casinos were introduced during this period and other forms such as gaming machines became more widely available.

The Impact of the Introduction of Casinos

The study attempted to directly assess the impact of the introduction of urban casinos to New Zealand's two major cities, Auckland and Christchurch, in 1994 and 1996 respectively. Because baseline measures had been obtained prior to the establishment of casinos from people resident in these two cities as well as from people in the country's third major metropolitan area that did not have a casino, this constituted a natural experiment with 'experimental' and a 'control' groups. No evidence was found for an impact of casinos on either gambling participation or problem gambling. In part this outcome may have been due to the relatively small sample size and resultant lack of statistical power. To have an impact, the effect of introducing casinos would have to have been very strong. In addition, the sample was not representative of the adult populations of these centres. In 1991, it consisted of people who already had gambling problems and people who did not have problems and gambled weekly or more often. From other survey findings it is evident that many of these people were in the process of

reducing their interest and involvement in gambling and many with problems were overcoming them.

Some Implications of the Findings

It is possible, indeed likely, that disproportionately more of the 1991 Phase One participants who could not be located or who declined to participate in 1998 were people who currently experienced gambling problems. Be this as it may, a large proportion of current probable pathological and problem gamblers who were re-assessed appear to have overcome their problems. This finding is of considerable interest and is consistent with the findings of previous community studies of people with serious alcohol problems (Vaillant, 1995). Information concerning the fifth group mentioned above further suggests that such changes are typically of long duration. However, this matter requires further examination in prospective studies that involve repeat assessments over time.

Another finding, that may be controversial, is that most of the probable pathological and problem gamblers who no longer reported problems in 1998 continued to gamble to some extent, often on a weekly or more frequent basis. The potential significance and implications of this finding are such that further research is required before it can be regarded as definitive. Most problematic gamblers who continued to gamble regularly, however, switched to non-continuous forms. It would be useful to know if this type of involvement can be sustained without gambling problems re-emerging and whether or not those who continue to participate in continuous forms are more prone to relapse than those who favour non-continuous forms, gamble infrequently or abstain. It is also important to ascertain whether or not these findings apply to problem gamblers who present to specialist counselling and health services for assistance.

Comorbidity and its Relevance to Overcoming Gambling Problems

In addition to reducing their gambling participation and gambling problems, 1991 probable pathological gamblers, but not members of the other groups, also evidenced significant reductions in non-psychotic psychological disturbance from 1991 to 1998. However, similar reductions in hazardous drinking and alcohol problems were not evident for 1991 probable pathological and problem gamblers. In other words, problematic gamblers who also experienced alcohol problems in 1991 tended to retain these problems, even when they no longer reported gambling problems. Furthermore, some people who did not have alcohol problems in 1991 subsequently developed them.

Multiple logistic regression analyses were used to identify which of the many factors measured in 1991 were the strongest independent predictors of current probable pathological and problem gambling in 1998. The strongest predictors were found to be severity of SOGS-R defined gambling problems in 1991, the presence of alcohol problems and a preference for betting on horse or dog races. Putting this another way, people with less severe gambling problems, problem gamblers without co-morbid alcohol problems and problem gamblers who favoured gaming machines or non-continuous forms of gambling were much more likely to report being free of gambling problems seven years later.

Help-seeking and Self Recovery

One aim of the longitudinal survey was to examine the role of professional and non-professional health and support services in overcoming gambling problems. However, none of the 1998 participants reported that they had ever sought or received professional or specialist assistance for their gambling problems. All of the participants who themselves considered that at some stage they had experienced gambling problems, and had had periods when they had overcome their problems, believed that this had been accomplished by their own efforts. Although no participants had sought help for themselves, eight percent reported that they had done so for family members or friends with gambling problems. Gamblers Anonymous, general medical practitioners and mental health professionals were mentioned in this regard.

Some Implications of the Instability of the Lifetime SOGS-R measure

One other finding from this study has important implications for problem gambling research. While the various problem gambling measures were found to be moderately to strongly related, suggesting that they are measuring essentially the same underlying construct, it was found that performance on one measure (the lifetime SOGS-R) changed significantly over time. Brief mention was made to this finding earlier. Whereas performance on the current SOGS-R is expected to increase or decrease over time, reflecting changes in respondents' actual problem gambling status, scores obtained from the lifetime SOGS-R and original SOGS should not decrease over time if they are valid measures of lifetime problem gambling status. Scores could increase, however, if people who did not have problems when initially assessed subsequently developed problems.

Of the 39 1991 lifetime SOGS-R defined probable pathological gamblers, it was found that only 28 percent were similarly categorised when the lifetime measure was re-administered in 1998. While a further 38 percent were assessed as problem gamblers on this measure, 33 percent obtained lifetime scores in the non-problem range.

In the case of the 38 1991 lifetime SOGS-R defined problem gamblers, the discrepancy was even larger. Eighteen percent were classified as lifetime probable pathological gamblers in 1998. This is not problematic from a measurement point of view. It could be expected that a number of people who had gambling problems in 1991 or previously would subsequently develop more serious problems. However, only 13 percent were re-assessed in 1998 as lifetime problem gamblers when it could be expected that all of the remaining 82 percent would be in this category. Most of these people were classified on the basis of their 1998 lifetime SOGS-R scores as non-problem gamblers.

None of the 66 participants in the two 1991 lifetime SOGS-R defined non-problem frequent continuous or non-continuous gamblers scored within the lifetime probable pathological gambling range when re-assessed in 1998. Six percent, however, were classified as lifetime problem gamblers. Again, this does not raise questions about the validity of the lifetime SOGS-R as these people could have developed gambling problems since 1991.

Further analyses showed that lifetime SOGS-R performance tended to 'track down' over time among those 1991 lifetime probable pathological and problem gamblers who no longer had gambling problems in 1998 (as indexed by their current SOGS-R performance and reports of gambling participation). These findings suggest that many

problem gamblers who overcame their problems either forgot or failed to report their past gambling problems when reassessed. If this was the case, the original SOGS and lifetime SOGS-R are not valid measures of lifetime problem gambling. Rather, at best, they provide a highly conservative assessment of lifetime (past and current) gambling problems and may, in fact, be a better indicator of current problems than of whether or not people have ever experienced such problems at some time during their lives. Some of the implications of this are discussed in Abbott, Williams and Volberg (1999).

Briefly, one implication of the lifetime SOGS-R measure's instability over time is that past lifetime pathological gambling prevalence estimates may be highly conservative. Actual rates may well be more than double published rates, depending upon the age of the population studied and a variety of other factors.

A further implication is that if lifetime prevalence rates are under-estimated, the index of problem gambling recovery that has been assumed to be provided by subtracting the current rate from the lifetime rate will also be invalid. More specifically, this index will greatly under-estimate the actual extent of recovery. This interpretation is consistent with the finding of high rates of problem reduction found in the present study when current problem gambling status was assessed in 1991 and 1998.

Additionally, Abbott and Volberg's (1991; 1996) interpretation of age differences in lifetime probable pathological and problem gambling prevalence in their 1991 national survey might have an alternative explanation. While it is possible that much higher lifetime prevalence rates among younger adults reflect a recent increase in problem gambling prevalence in this sector of the population, this finding could also arise if substantial numbers of older adults who had problems in the past fail to report them. Both explanations may have some validity. Longitudinal studies are required to assess these hypotheses.

The 1996 North Health Survey

Introduction

The Committee on Problem Gambling Management commissioned North Health to conduct a second national prevalence survey in 1996. Although a preliminary report on this survey was provided for the commissioning body (North Health, 1996), it was not publicly released.

Survey Description

As with the 1991 national survey, telephone interviews were undertaken by National Research Bureau interviewers. The sample size was 1,500, considerably smaller than that of the 1991 survey. Telephone numbers were randomly selected from printed telephone directories and did not include a procedure designed to pick up unlisted telephone numbers. In other respects, apart from making fewer callbacks (a maximum of 2 rather than 8), participant recruitment methods used in the two studies were similar. The questionnaire was generally similar to that used in 1991 and data were similarly post-stratified to adjust for the under-representation of some groups and the effect of selecting only one respondent per household. In contrast to the 1991 survey, Pacific Island, Asian and participants of some other ethnicities were not offered the option of having an interview in their preferred language.

Response Rates and Representativeness of the Sample

The response rate for this survey, measured in the same way as in the 1991 study, was 46 percent. If adjusted to facilitate comparison with the more conservative measure used in the 1999 NPS, it would probably have been 40 to 42 percent. Rates were much lower for some urban areas. In addition, Māori, Asian and Pacific Island people were significantly under-represented and subsequent weighting of the data set could not adequately compensate for the low response rates in these groups. The authors of the North Health report appropriately cautioned that their sample was not fully representative of the adult population and that its findings should be treated with caution (North Health, 1996).

Major Findings

Despite the differences in methodology between the 1991 and 1996 North Health national surveys, similar percentages reported having gambled at some time in their lives (95% in 1991; 92% in 1996). However, apart from Lotto, lower lifetime participation rates were mentioned for most types of gambling. Reported past six months participation rates were also generally lower than those found in the 1995 Department of Internal Affairs national survey of gambling participation and attitudes towards gambling (Reid & Searle, 1996). While not mentioned by the authors, however, weekly or more frequent participation rates were very similar to those of the 1995 Departmental survey. Reported mean overall monthly gambling expenditure (NZ$35) was similar to that of both the 1991 and 1995 surveys. Weekly or more frequent gamblers in the 1991 and 1996 North Health surveys also reported similar mean monthly expenditures. The current (past 6 month) probable pathological gambling prevalence rate for the North Health survey was 0.35 percent, considerably lower than the 1991 point prevalence estimate of 1.2 percent.

Given the concerns of the 1996 survey team about the response rate and sample, they subsequently made additional call-backs (up to 8 as in the 1991 national survey) to telephone numbers where contact had not been established and attempted to interview people who had initially declined participation. These measures were successful in increasing the sample size from 1,500 to 2,040 and boosting the response rate (as measured in the North Health report) to 62 percent. This rate was only slightly lower than that of the 1991 national survey and higher than that of the most problem gambling prevalence surveys published internationally (Abbott & Volberg, 1999a). However, no mention was made of whether or not this increased Māori, Pacific Island and Asian representation.

Gambling participation and expenditure were not reported for the expanded 1996 sample. The recalculated current probable pathological gambling prevalence estimate increased slightly to 0.44 percent. Paradoxically, given the higher Māori and Pacific Island prevalence rates in the 1991 national survey, the current estimate increased to 0.7 when members of these two ethnic groups were removed from the sample. Given the high probability that appropriately constructed confidence intervals for the 1996 and 1991 current prevalence estimates (intervals calculated taking account of both sample complexity and low proportions) would overlap, Abbott and Volberg (1999a) and Abbott, Williams and Volberg, (1999) concluded that these findings suggest that there was no significant change in problem gambling prevalence from 1991 to 1996. However, this conclusion rests on the assumption that the study samples were sufficiently similar and

representative of the adult population to justify comparison of their findings. In this regard, a degree of uncertainty prevails.

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Appendix Two: Results of Analyses to Assess the Representativeness of the Phase Two Sample

Stratum	Sex	Ph1 proportion	Ph2 proportion	difference
Problem	Male	0.63 (88)	0.65 (48)	0.02
Problem	Female	0.37 (52)	0.35 (26)	-0.02
Infrequent	Male	0.42 (1418)	0.28 (25)	-0.14
Infrequent	Female	0.58 (1988)	0.72 (64)	0.14
Continuous	Male	0.46 (889)	0.49 (33)	0.03
Continuous	Female	0.54 (1044)	0.51 (35)	-0.03
Non-continuous	Male	0.53 (303)	0.56 (14)	0.03
Non-continuous	Female	0.47 (274)	0.44 (11)	-0.03

Stratum	Age	Ph1 proportion	Ph2 proportion	difference
Problem	18-24	0.10 (14)	0.08 (6)	-0.02
Problem	25-34	0.30 (42)	0.31 (23)	0.01
Problem	35-44	0.23 (32)	0.22 (16)	-0.01
Problem	45-54	0.19 (27)	0.26 (19)	0.06
Problem	55-64	0.10 (14)	0.07 (5)	-0.03
Problem	65+	0.08 (11)	0.07 (5)	-0.01
Infrequent	18-24	0.09 (321)	0.09 (8)	-0.00
Infrequent	25-34	0.21 (701)	0.16 (14)	-0.05
Infrequent	35-44	0.24 (802)	0.26 (23)	0.02
Infrequent	45-54	0.14 (485)	0.19 (17)	0.05
Infrequent	55-64	0.11 (374)	0.08 (7)	-0.03
Infrequent	65+	0.21 (723)	0.22 (20)	0.01
Continuous	18-24	0.03 (61)	0.04 (3)	0.01
Continuous	25-34	0.17 (324)	0.18 (12)	0.01
Continuous	35-44	0.22 (423)	0.22 (15)	0.00
Continuous	45-54	0.20 (383)	0.25 (17)	0.05
Continuous	55-64	0.15 (293)	0.12 (8)	-0.03
Continuous	65+	0.23 (449)	0.19 (13)	-0.04
Non-continuous	18-24	0.09 (52)	0.08 (2)	-0.01
Non-continuous	25-34	0.17 (100)	0.00 (0)	-0.17
Non-continuous	35-44	0.19 (107)	0.24 (6)	0.05
Non-continuous	45-54	0.17 (99)	0.32 (8)	0.15
Non-continuous	55-64	0.16 (92)	0.20 (5)	0.04
Non-continuous	65+	0.22 (127)	0.16 (4)	-0.06

Stratum	Ëthnicity	Ph1 proportion	Ph2 proportion	difference
Problem	European	0.69 (97)	0.78 (58)	0.09
Problem	Māori	0.20 (28)	0.12 (9)	-0.08
Problem	Pacific Island	0.06 (9)	0.07 (5)	0.00
Problem	Asian	0.03 (4)	0.03 (2)	-0.00
Problem	Other	0.01 (2)	0.00 (0)	-0.01
Infrequent	European	0.88 (3009)	0.93 (83)	0.05
Infrequent	Māori	0.06 (204)	0.03 (3)	-0.03
Infrequent	Pacific Island	0.01 (41)	0.02 (2)	0.01
Infrequent	Asian	0.02 (82)	0.01 (1)	-0.01
Infrequent	Other	0.02 (70)	0.00 (0)	-0.02
Continuous	European	0.88 (1701)	0.91 (62)	0.03
Continuous	Māori	0.07 (141)	0.09 (6)	0.02
Continuous	Pacific Island	0.01 (23)	0.00 (0)	-0.01
Continuous	Asian	0.02 (33)	0.00 (0)	-0.02
Continuous	Other	0.02 (35)	0.00 (0)	-0.02
Non-continuous	European	0.90 (520)	0.88 (22)	-0.02
Non-continuous	Māori	0.07 (38)	0.04 (1)	-0.03
Non-continuous	Pacific Island	0.01 (5)	0.04 (1)	0.03
Non-continuous	Asian	0.01 (7)	0.00 (0)	-0.01
Non-continuous	Other	0.01 (7)	0.04 (1)	0.03

Note that there were Labour Force Status non-respondents in ph1 so the proportions don't add up to 1.

Stratum	Labour Force Status	Ph1 proportion	Ph2 proportion	difference
Problem	Employed	0.70 (98)	0.80 (59)	0.10
Problem	Unemployed	0.06 (8)	0.05 (4)	-0.00
Problem	Not in Labour Fce	0.24 (33)	0.15 (11)	-0.09
Infrequent	Employed	0.61(2091)	0.57 (51)	-0.04
Infrequent	Unemployed	0.03 (103)	0.07 (6)	0.04
Infrequent	Not in Labour Fce	0.35 (1204)	0.36 (32)	0.01
Continuous	Employed	0.63 (1220)	0.71 (48)	0.07
Continuous	Unemployed	0.02 (47)	0.00 (0)	-0.02
Continuous	Not in Labour Fce	0.34 (663)	0.29 (20)	-0.05
Non-continuous	Employed	0.65 (373)	0.68 (17)	0.03
Non-continuous	Unemployed	0.02 (11)	0.04 (1)	0.02
Non-continuous	Not in Labour Fce	0.33 (192)	0.28 (7)	-0.05

Stratum	Household Income	Ph1 proportion	Ph2 proportion	difference
Problem	$20,000 or less	0.21 (29)	0.23 (17)	0.02
Problem	$20,001 - $30,000	0.16 (23)	0.11 (8)	-0.06
Problem	$30,001 - $40,000	0.09 (13)	0.08 (6)	-0.01
Problem	$40,001 - $50,000	0.14 (20)	0.18 (13)	0.03
Problem	$50,001 - $70,000	0.15 (21)	0.16 (12)	0.01
Problem	$70,000 or more	0.14 (20)	0.18 (13)	0.03
Problem	Not elsewhere inc	0.10 (14)	0.07 (5)	-0.03
Infrequent	$20,000 or less	0.25 (865)	0.24 (21)	-0.02
Infrequent	$20,001 - $30,000	0.15 (507)	0.19 (17)	0.04
Infrequent	$30,001 - $40,000	0.13 (445)	0.18 (16)	0.05
Infrequent	$40,001 - $50,000	0.11 (361)	0.10 (9)	-0.00
Infrequent	$50,001 - $70,000	0.13 (429)	0.10 (9)	-0.02
Infrequent	$70,000 or more	0.16 (536)	0.15 (13)	-0.01
Infrequent	Not elsewhere inc	0.08 (263)	0.04 (4)	-0.03
Continuous	$20,000 or less	0.24 (456)	0.21 (14)	-0.03
Continuous	$20,001 - $30,000	0.17 (325)	0.18 (12)	0.01
Continuous	$30,001 - $40,000	0.16 (301)	0.21 (14)	0.05
Continuous	$40,001 - $50,000	0.12 (228)	0.06 (4)	-0.06
Continuous	$50,001 - $70,000	0.13 (257)	0.15 (10)	0.01
Continuous	$70,000 or more	0.14 (271)	0.21 (14)	0.07
Continuous	Not elsewhere inc	0.05 (95)	0.00 (0)	-0.05
Non-continuous	$20,000 or less	0.24 (140)	0.24 (6)	-0.00
Non-continuous	$20,001 - $30,000	0.18 (101)	0.28 (7)	0.10
Non-continuous	$30,001 - $40,000	0.15 (88)	0.08 (2)	-0.07
Non-continuous	$40,001 - $50,000	0.11 (65)	0.04 (1)	-0.07
Non-continuous	$50,001 - $70,000	0.10 (56)	0.12 (3)	0.02
Non-continuous	$70,000 or more	0.16 (90)	0.24 (6)	0.08
Non-continuous	Not elsewhere inc	0.06 (37)	0.00 (0)	-0.06

Stratum	Self-rating lifetime	Ph1 proportion	Ph2 proportion	difference
Problem	Problem	0.64 (89)	0.59 (44)	-0.04
Problem	No Problem	0.36 (51)	0.41 (30)	0.04
Infrequent	Problem	0.00 (0)	0.00 (0)	0.00
Infrequent	No Problem	1.00 (3406)	1.00 (89)	0.00
Continuous	Problem	0.00 (0)	0.00 (0)	0.00
Continuous	No Problem	1.00 (1933)	1.00 (68)	0.00
Non-continuous	Problem	0.00 (0)	0.00 (0)	0.00
Non-continuous	No Problem	1.00 (577)	1.00 (25)	0.00

Stratum	Self-rating current	Ph1 proportion	Ph2 proportion	difference
Problem	Problem	0.32 (45)	0.30 (22)	0.02
Problem	No Problem	0.68 (95)	0.70 (52)	-0.02
Infrequent	Problem	0.00 (0)	0.00 (0)	0.00
Infrequent	No Problem	1.00 (3406)	1.00 (89)	0.00
Continuous	Problem	0.00 (0)	0.00 (0)	0.00
Continuous	No Problem	1.00 (1933)	1.00 (68)	0.00
Non-continuous	Problem	0.00 (0)	0.00 (0)	0.00
Non-continuous	No Problem	1.00 (577)	1.00 (25)	0.00

Appendix Three: Consent and Information Forms and Phase Two Questionnaire